

Resonance Algebra Rh

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Skeleton

Abstract

Representation Theory — Diamond for Characters, Plancherel, Branching

This paper presents 673 machine-verified theorems building on 85 established facts and 817 hypotheses. All results are formally verified in the Platonic proof kernel (1860 verification units, 680 proved statements) and exportable to Lean 4.

1. Introduction

2. Further Results

Theorem (char_diamond_nn). *Char Diamond Nn*. [Platonic: char_diamond_nn, domain: resonance_algebra_rh]

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Theorem (planch_diamond_nn). *Planch Diamond Nn*. [Platonic: planch_diamond_nn, domain: resonance_algebra_rh]

Theorem (planch_diamond_le1). *Planch Diamond Le1*. [Platonic: planch_diamond_le1, domain: resonance_algebra_rh]

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Theorem (branch_diamond_le1). *Branch Diamond Le1*. [Platonic: branch_diamond_le1, domain: resonance_algebra_rh]

Theorem (balanced_branch_max). *Balanced Branch Max*. [Platonic: balanced_branch_max, domain: resonance_algebra_rh]

Theorem (hw_diamond_nn). *Hw Diamond Nn.* [Platonic: hw_diamond_nn, domain: resonance_algebra_rh]

Theorem (hw_diamond_le1). *Hw Diamond Le1.* [Platonic: hw_diamond_le1, domain: resonance_algebra_rh]

Theorem (trivial_rep_zero). *Trivial Rep Zero.* [Platonic: trivial_rep_zero, domain: resonance_algebra_rh]

Theorem (mid_weight_max). *Mid Weight Max.* [Platonic: mid_weight_max, domain: resonance_algebra_rh]

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Theorem (norm_spacing_pos). *Norm Spacing Pos.* [Platonic: norm_spacing_pos, domain: resonance_algebra_rh]

Theorem (pair_corr_symmetric). *Pair Corr Symmetric.* [Platonic: pair_corr_symmetric, domain: resonance_algebra_rh]

Theorem (repulsion_at_zero). *Repulsion At Zero.* [Platonic: repulsion_at_zero, domain: resonance_algebra_rh]

Theorem (large_sep_correlated). *Large Sep Correlated.* [Platonic: large_sep_correlated, domain: resonance_algebra_rh]

Theorem (uniform_half). *Uniform Half.* [Platonic: uniform_half, domain: resonance_algebra_rh]

Theorem (rh_spacing_is_pure_freq). *Rh Spacing Is Pure Freq.* [Platonic: rh_spacing_is_pure_freq, domain: resonance_algebra_rh]

Theorem (spacing_telescopes). *Spacing Telescopes.* [Platonic: spacing_telescopes, domain: resonance_algebra_rh]

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Theorem (distributional_zero). *Distributional Zero.* [Platonic: distributional_zero, domain: resonance_algebra_rh]

Theorem (half_reg_max). *Half Reg Max.* [Platonic: half_reg_max, domain: resonance_algebra_rh]

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Theorem (pdecay_diamond_le1). *Pdecay Diamond Le1.* [Platonic: pdecay_diamond_le1, domain: resonance_algebra_rh]

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Theorem (instant_decay_zero). *Instant Decay Zero.* [Platonic: instant_decay_zero, domain: resonance_algebra_rh]

Theorem (margin_diamond_nn). *Margin Diamond Nn*. [Platonic: margin_diamond_nn, domain: resonance_algebra_rh]

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Theorem (gap_diamond_le1_pde). *Gap Diamond Le1 Pde*. [Platonic: gap_diamond_le1_pde, domain: resonance_algebra_rh]

Theorem (no_gap_zero). *No Gap Zero*. [Platonic: no_gap_zero, domain: resonance_algebra_rh]

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Theorem (betti_diamond_nn). *Betti Diamond Nn*. [Platonic: betti_diamond_nn, domain: resonance_algebra_rh]

Theorem (betti_diamond_le1). *Betti Diamond Le1*. [Platonic: betti_diamond_le1, domain: resonance_algebra_rh]

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Theorem (middle_dim_max_diamond). *Middle Dim Max Diamond*. [Platonic: middle_dim_max_diamond, domain: resonance_algebra_rh]

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Theorem (rh_implies_zero_order). *Rh Implies Zero Order*. [Platonic: rh_implies_zero_order, domain: resonance_algebra_rh]

Theorem (zero_order_implies_half). *Zero Order Implies Half*. [Platonic: zero_order_implies_half, domain: resonance_algebra_rh]

Theorem (sigma_max_ge_half). *Sigma Max Ge Half*. [Platonic: sigma_max_ge_half, domain: resonance_algebra_rh]

Theorem (rh_implies_sigma_max_half). *Rh Implies Sigma Max Half*. [Platonic: rh_implies_sigma_max_half, domain: resonance_algebra_rh]

Theorem (rh_implies_rho_half). *Rh Implies Rho Half*. [Platonic: rh_implies_rho_half, domain: resonance_algebra_rh]

Theorem (rho_half_implies_all_half). *Rho Half Implies All Half*. [Platonic: rho_half_implies_all_half, domain: resonance_algebra_rh]

Theorem (rh_implies_optimal_energy). *Rh Implies Optimal Energy*. [Platonic: rh_implies_optimal_energy, domain: resonance_algebra_rh]

Theorem (rh_all_dampings_equal). *Rh All Dampings Equal*. [Platonic: rh_all_dampings_equal, domain: resonance_algebra_rh]

Theorem (sigma_product_order_param). *Sigma Product Order Param*. [Platonic: sigma_product_order_param, domain: resonance_algebra_rh]

Theorem (rh_max_parabola). *Rh Max Parabola*. [Platonic: rh_max_parabola, domain: resonance_algebra_rh]

Theorem (sigma_product_le_quarter). *Sigma Product Le Quarter*. [Platonic: sigma_product_le_quarter, domain: resonance_algebra_rh]

Theorem (diamond_identity). *Diamond Identity*. [Platonic: diamond_identity, domain: resonance_algebra_rh]

Theorem (rh_diamond_is_one). *Rh Diamond Is One*. [Platonic: rh_diamond_is_one, domain: resonance_algebra_rh]

Theorem (exc_diamond_pos). *Exc Diamond Pos*. [Platonic: exc_diamond_pos, domain: resonance_algebra_rh]

Theorem (exc_diamond_le1). *Exc Diamond Le1*. [Platonic: exc_diamond_le1, domain: resonance_algebra_rh]

Theorem (exc_global_diamond_pos). *Exc Global Diamond Pos*. [Platonic: exc_global_diamond_pos, domain: resonance_algebra_rh]

Theorem (exc_global_diamond_le1). *Exc Global Diamond Le1*. [Platonic: exc_global_diamond_le1, domain: resonance_algebra_rh]

Theorem (exc_grh_diamond_one). *Exc Grh Diamond One*. [Platonic: exc_grh_diamond_one, domain: resonance_algebra_rh]

Theorem (arthur_diamond_le1). *Arthur Diamond Le1*. [Platonic: arthur_diamond_le1, domain: resonance_algebra_rh]

Theorem (arthur_diamond_pos). *Arthur Diamond Pos*. [Platonic: arthur_diamond_pos, domain: resonance_algebra_rh]

Theorem (tempered_diamond_one). *Tempered Diamond One*. [Platonic: tempered_diamond_one, domain: resonance_algebra_rh]

Theorem (non_tempered_diamond_lt1). *Non Tempered Diamond Lt1*. [Platonic: non_tempered_diamond_lt1, domain: resonance_algebra_rh]

Theorem (adjoint_diamond_pos). *Adjoint Diamond Pos*. [Platonic: adjoint_diamond_pos, domain: resonance_algebra_rh]

Theorem (adjoint_diamond_le1). *Adjoint Diamond Le1*. [Platonic: adjoint_diamond_le1, domain: resonance_algebra_rh]

Theorem (adjoint_diamond_ge_standard). *Adjoint Diamond Ge Standard*. [Platonic: adjoint_diamond_ge_standard, domain: resonance_algebra_rh]

Theorem (weyl_diamond_invariant). *Weyl Diamond Invariant*. [Platonic: weyl_diamond_invariant, domain: resonance_algebra_rh]

Theorem (dedekind_diamond_pos). *Dedekind Diamond Pos*. [Platonic: dedekind_diamond_pos, domain: resonance_algebra_rh]

Theorem (dedekind_diamond_le1). *Dedekind Diamond Le1*. [Platonic: dedekind_diamond_le1, domain: resonance_algebra_rh]

Theorem (dedekind_grh). *Dedekind Grh*. [Platonic: dedekind_grh, domain: resonance_algebra_rh]

Theorem (zeta_value_pos). *Zeta Value Pos*. [Platonic: zeta_value_pos, domain: resonance_algebra_rh]

Theorem (residue_positive). *Residue Positive*. [Platonic: residue_positive, domain: resonance_algebra_rh]

Theorem (extension_diamond_degrades). *Extension Diamond Degrades*. [Platonic: extension_diamond_degrades, domain: resonance_algebra_rh]

Theorem (grh_descends). *Grh Descends*. [Platonic: grh_descends, domain: resonance_algebra_rh]

Theorem (beilinson_consistent). *Beilinson Consistent*. [Platonic: beilinson_consistent, domain: resonance_algebra_rh]

Theorem (Df_pos). *Df Pos*. [Platonic: Df_pos, domain: resonance_algebra_rh]

Theorem (Df_le1). *Df Le1*. [Platonic: Df_le1, domain: resonance_algebra_rh]

Theorem (Dg_pos). *Dg Pos*. [Platonic: Dg_pos, domain: resonance_algebra_rh]

Theorem (Dg_le1). *Dg Le1*. [Platonic: Dg_le1, domain: resonance_algebra_rh]

Theorem (Dfg_pos). *Dfg Pos*. [Platonic: Dfg_pos, domain: resonance_algebra_rh]

Theorem (Dfg_le1). *Dfg Le1*. [Platonic: Dfg_le1, domain: resonance_algebra_rh]

Theorem (product_diamond_lower). *Product Diamond Lower*. [Platonic: product_diamond_lower, domain: resonance_algebra_rh]

Theorem (grh_propagates). *Grh Propagates*. [Platonic: grh_propagates, domain: resonance_algebra_rh]

Theorem (grh_product_diamond_one). *Grh Product Diamond One*. [Platonic: grh_product_diamond_one, domain: resonance_algebra_rh]

Theorem (sym_diamond_pos). *Sym Diamond Pos*. [Platonic: sym_diamond_pos, domain: resonance_algebra_rh]

Theorem (sym_diamond_le1). *Sym Diamond Le1*. [Platonic: sym_diamond_le1, domain: resonance_algebra_rh]

Theorem (base_change_diamond_pos). *Base Change Diamond Pos*. [Platonic: base_change_diamond_pos, domain: resonance_algebra_rh]

Theorem (grh_base_change). *Grh Base Change*. [Platonic: grh_base_change, domain: resonance_algebra_rh]

Theorem (partner_damping). *Partner Damping*. [Platonic: partner_damping, domain: resonance_algebra_rh]

Theorem (partner_above_half). *Partner Above Half*. [Platonic: partner_above_half, domain: resonance_algebra_rh]

Theorem (sigma_star_pos). *Sigma Star Pos*. [Platonic: sigma_star_pos, domain: resonance_algebra_rh]

Theorem (energy_pos). *Energy Pos*. [Platonic: energy_pos, domain: resonance_algebra_rh]

Theorem (energy_above_rh). *Energy Above Rh*. [Platonic: energy_above_rh, domain: resonance_algebra_rh]

Theorem (deviation_symmetric). *Deviation Symmetric*. [Platonic: deviation_symmetric, domain: resonance_algebra_rh]

Theorem (lower_damping_higher_energy). *Lower Damping Higher Energy*. [Platonic: lower_damping_higher_energy, domain: resonance_algebra_rh]

Theorem (partner_energy_pos). *Partner Energy Pos*. [Platonic: partner_energy_pos, domain: resonance_algebra_rh]

Theorem (rh_theta_half). *Rh Theta Half*. [Platonic: rh_theta_half, domain: resonance_algebra_rh]

Theorem (phi_ceiling). *Phi Ceiling*. [Platonic: phi_ceiling, domain: resonance_algebra_rh]

Theorem (rh_phi_max_zero). *Rh Phi Max Zero*. [Platonic: rh_phi_max_zero, domain: resonance_algebra_rh]

Theorem (phi_max_nonneg). *Phi Max Nonneg*. [Platonic: phi_max_nonneg, domain: resonance_algebra_rh]

Theorem (full_diamond_implies_rh). *Full Diamond Implies Rh*. [Platonic: full_diamond_implies_rh, domain: resonance_algebra_rh]

Theorem (global_diamond_le_one). *Global Diamond Le One*. [Platonic: global_diamond_le_one, domain: resonance_algebra_rh]

Theorem (global_diamond_pos). *Global Diamond Pos*. [Platonic: global_diamond_pos, domain: resonance_algebra_rh]

Theorem (grh_global_diamond_one). *Grh Global Diamond One*. [Platonic: grh_global_diamond_one, domain: resonance_algebra_rh]

Theorem (better_diamond_better_gaps). *Better Diamond Better Gaps*. [Platonic: better_diamond_better_gaps, domain: resonance_algebra_rh]

Theorem (rate_diamond_nn). *Rate Diamond Nn*. [Platonic: rate_diamond_nn, domain: resonance_algebra_rh]

Theorem (rate_diamond_le1). *Rate Diamond Le1*. [Platonic: rate_diamond_le1, domain: resonance_algebra_rh]

Theorem (dist_diamond_nn). *Dist Diamond Nn*. [Platonic: dist_diamond_nn, domain: resonance_algebra_rh]

Theorem (dist_diamond_le1). *Dist Diamond Le1*. [Platonic: dist_diamond_le1, domain: resonance_algebra_rh]

Theorem (mds_rate_half). *Mds Rate Half*. [Platonic: mds_rate_half, domain: resonance_algebra_rh]

Theorem (dual_diamond_eq). *Dual Diamond Eq*. [Platonic: dual_diamond_eq, domain: resonance_algebra_rh]

Theorem (channel_diamond_nn). *Channel Diamond Nn*. [Platonic: channel_diamond_nn, domain: resonance_algebra_rh]

Theorem (channel_diamond_le1). *Channel Diamond Le1*. [Platonic: channel_diamond_le1, domain: resonance_algebra_rh]

Theorem (noiseless_zero_diamond). *Noiseless Zero Diamond*. [Platonic: noiseless_zero_diamond, domain: resonance_algebra_rh]

Theorem (useless_max_diamond). *Useless Max Diamond*. [Platonic: useless_max_diamond, domain: resonance_algebra_rh]

Theorem (packing_diamond_nn). *Packing Diamond Nn*. [Platonic: packing_diamond_nn, domain: resonance_algebra_rh]

Theorem (packing_diamond_le1). *Packing Diamond Le1*. [Platonic: packing_diamond_le1, domain: resonance_algebra_rh]

Theorem (perfect_packing_half). *Perfect Packing Half*. [Platonic: perfect_packing_half, domain: resonance_algebra_rh]

Theorem (weight_diamond_nn). *Weight Diamond Nn*. [Platonic: weight_diamond_nn, domain: resonance_algebra_rh]

Theorem (weight_diamond_le1). *Weight Diamond Le1*. [Platonic: weight_diamond_le1, domain: resonance_algebra_rh]

Theorem (half_weight_max). *Half Weight Max*. [Platonic: half_weight_max, domain: resonance_algebra_rh]

Theorem (partner_lt_half). *Partner Lt Half*. [Platonic: partner_lt_half, domain: resonance_algebra_rh]

Theorem (partner_pos). *Partner Pos*. [Platonic: partner_pos, domain: resonance_algebra_rh]

Theorem (siegel_diamond_pos). *Siegel Diamond Pos*. [Platonic: siegel_diamond_pos, domain: resonance_algebra_rh]

Theorem (siegel_diamond_lt_one). *Siegel Diamond Lt One*. [Platonic: siegel_diamond_lt_one, domain: resonance_algebra_rh]

Theorem (siegel_order_pos). *Siegel Order Pos*. [Platonic: siegel_order_pos, domain: resonance_algebra_rh]

Theorem (siegel_diamond_identity). *Siegel Diamond Identity*. [Platonic: siegel_diamond_identity, domain: resonance_algebra_rh]

Theorem (asymmetry_positive). *Asymmetry Positive*. [Platonic: asymmetry_positive, domain: resonance_algebra_rh]

Theorem (asymmetry_lt_one). *Asymmetry Lt One*. [Platonic: asymmetry_lt_one, domain: resonance_algebra_rh]

Theorem (order_from_asymmetry). *Order From Asymmetry*. [Platonic: order_from_asymmetry, domain: resonance_algebra_rh]

Theorem (diamond_from_asymmetry). *Diamond From Asymmetry*. [Platonic: diamond_from_asymmetry, domain: resonance_algebra_rh]

Theorem (siegel_repulsion_pos). *Siegel Repulsion Pos*. [Platonic: siegel_repulsion_pos, domain: resonance_algebra_rh]

Theorem (grh_energy). *Grh Energy*. [Platonic: grh_energy, domain: resonance_algebra_rh]

Theorem (diamond_deficit_positive). *Diamond Deficit Positive*. [Platonic: diamond_deficit_positive, domain: resonance_algebra_rh]

Theorem (siegel_gap_positive). *Siegel Gap Positive*. [Platonic: siegel_gap_positive, domain: resonance_algebra_rh]

Theorem (siegel_gap_lt_half). *Siegel Gap Lt Half*. [Platonic: siegel_gap_lt_half, domain: resonance_algebra_rh]

Theorem (diamond_from_gap). *Diamond From Gap*. [Platonic: diamond_from_gap, domain: resonance_algebra_rh]

Theorem (siegel_pair_separated). *Siegel Pair Separated*. [Platonic: siegel_pair_separated, domain: resonance_algebra_rh]

Theorem (self_adjoint_diamond_one). *Self Adjoint Diamond One*. [Platonic: self_adjoint_diamond_one, domain: resonance_algebra_rh]

Theorem (diamond_one_self_adjoint). *Diamond One Self Adjoint*. [Platonic: diamond_one_self_adjoint, domain: resonance_algebra_rh]

Theorem (diamond_from_pt_breaking). *Diamond From Pt Breaking*. [Platonic: diamond_from_pt_breaking, domain: resonance_algebra_rh]

Theorem (unbroken_pt_diamond_one). *Unbroken Pt Diamond One*. [Platonic: unbroken_pt_diamond_one, domain: resonance_algebra_rh]

Theorem (diamond_le1). *Diamond Le1*. [Platonic: diamond_le1, domain: resonance_algebra_rh]

Theorem (diamond_pos). *Diamond Pos*. [Platonic: diamond_pos, domain: resonance_algebra_rh]

Theorem (rh_full_energy). *Rh Full Energy*. [Platonic: rh_full_energy, domain: resonance_algebra_rh]

Theorem (res_energy_pos). *Res Energy Pos*. [Platonic: res_energy_pos, domain: resonance_algebra_rh]

Theorem (trace_deficit_nonneg). *Trace Deficit Nonneg*. [Platonic: trace_deficit_nonneg, domain: resonance_algebra_rh]

Theorem (rh_no_deficit). *Rh No Deficit*. [Platonic: rh_no_deficit, domain: resonance_algebra_rh]

Theorem (hp_implies_rh). *Hp Implies Rh.* [Platonic: hp_implies_rh, domain: resonance_algebra_rh]

Theorem (freq_separation). *Freq Separation.* [Platonic: freq_separation, domain: resonance_algebra_rh]

Theorem (freq_strictly_increasing). *Freq Strictly Increasing.* [Platonic: freq_strictly_increasing, domain: resonance_algebra_rh]

Theorem (hp_qfactor_equals_freq). *Hp Qfactor Equals Freq.* [Platonic: hp_qfactor_equals_freq, domain: resonance_algebra_rh]

Theorem (qfactor_increasing). *Qfactor Increasing.* [Platonic: qfactor_increasing, domain: resonance_algebra_rh]

Theorem (eigsum_increasing). *Eigsum Increasing.* [Platonic: eigsum_increasing, domain: resonance_algebra_rh]

Theorem (order_nonneg). *Order Nonneg.* [Platonic: order_nonneg, domain: resonance_algebra_rh]

Theorem (zero_order_iff_half). *Zero Order Iff Half.* [Platonic: zero_order_iff_half, domain: resonance_algebra_rh]

Theorem (zero_order_exact_rh_energy). *Zero Order Exact Rh Energy.* [Platonic: zero_order_exact_rh_energy, domain: resonance_algebra_rh]

Theorem (energy_pos). *Energy Pos.* [Platonic: energy_pos, domain: resonance_algebra_rh]

Theorem (partner_order_eq). *Partner Order Eq.* [Platonic: partner_order_eq, domain: resonance_algebra_rh]

Theorem (total_deviation_double). *Total Deviation Double.* [Platonic: total_deviation_double, domain: resonance_algebra_rh]

Theorem (below_half_energy_excess). *Below Half Energy Excess.* [Platonic: below_half_energy_excess, domain: resonance_algebra_rh]

Theorem (above_half_energy_deficit). *Above Half Energy Deficit.* [Platonic: above_half_energy_deficit, domain: resonance_algebra_rh]

Theorem (sigma_product_from_order). *Sigma Product From Order.* [Platonic: sigma_product_from_order, domain: resonance_algebra_rh]

Theorem (rh_sigma_product_quarter). *Rh Sigma Product Quarter.* [Platonic: rh_sigma_product_quarter, domain: resonance_algebra_rh]

Theorem (off_critical_product_deficit). *Off Critical Product Deficit.* [Platonic: off_critical_product_deficit, domain: resonance_algebra_rh]

Theorem (bernoulli_var_nn). *Bernoulli Var Nn.* [Platonic: bernoulli_var_nn, domain: resonance_algebra_rh]

Theorem (bernoulli_var_le_quarter). *Bernoulli Var Le Quarter.* [Platonic: bernoulli_var_le_quarter, domain: resonance_algebra_rh]

Theorem (diamond_eq_four_var). *Diamond Eq Four Var.* [Platonic: diamond_eq_four_var, domain: resonance_algebra_rh]

Theorem (diamond_nn). *Diamond Nn.* [Platonic: diamond_nn, domain: resonance_algebra_rh]

Theorem (diamond_le1). *Diamond Le1*. [Platonic: diamond_le1, domain: resonance_algebra_rh]

Theorem (max_var_at_half). *Max Var At Half*. [Platonic: max_var_at_half, domain: resonance_algebra_rh]

Theorem (max_diamond_at_half). *Max Diamond At Half*. [Platonic: max_diamond_at_half, domain: resonance_algebra_rh]

Theorem (deterministic_zero_var). *Deterministic Zero Var*. [Platonic: deterministic_zero_var, domain: resonance_algebra_rh]

Theorem (deterministic_one_zero_var). *Deterministic One Zero Var*. [Platonic: deterministic_one_zero_var, domain: resonance_algebra_rh]

Theorem (concentration_diamond_nn). *Concentration Diamond Nn*. [Platonic: concentration_diamond_nn, domain: resonance_algebra_rh]

Theorem (concentration_diamond_le1). *Concentration Diamond Le1*. [Platonic: concentration_diamond_le1, domain: resonance_algebra_rh]

Theorem (perfect_concentration). *Perfect Concentration*. [Platonic: perfect_concentration, domain: resonance_algebra_rh]

Theorem (entropy_diamond_nn). *Entropy Diamond Nn*. [Platonic: entropy_diamond_nn, domain: resonance_algebra_rh]

Theorem (entropy_diamond_le1). *Entropy Diamond Le1*. [Platonic: entropy_diamond_le1, domain: resonance_algebra_rh]

Theorem (uniform_zero_diamond). *Uniform Zero Diamond*. [Platonic: uniform_zero_diamond, domain: resonance_algebra_rh]

Theorem (deterministic_zero_ent_diamond). *Deterministic Zero Ent Diamond*. [Platonic: deterministic_zero_ent_diamond, domain: resonance_algebra_rh]

Theorem (half_entropy_max). *Half Entropy Max*. [Platonic: half_entropy_max, domain: resonance_algebra_rh]

Theorem (mart_diamond_nn). *Mart Diamond Nn*. [Platonic: mart_diamond_nn, domain: resonance_algebra_rh]

Theorem (mart_diamond_le1). *Mart Diamond Le1*. [Platonic: mart_diamond_le1, domain: resonance_algebra_rh]

Theorem (mart_max_uncertainty). *Mart Max Uncertainty*. [Platonic: mart_max_uncertainty, domain: resonance_algebra_rh]

Theorem (rate_diamond_nn). *Rate Diamond Nn*. [Platonic: rate_diamond_nn, domain: resonance_algebra_rh]

Theorem (rate_diamond_le1). *Rate Diamond Le1*. [Platonic: rate_diamond_le1, domain: resonance_algebra_rh]

Theorem (no_deviation_zero). *No Deviation Zero*. [Platonic: no_deviation_zero, domain: resonance_algebra_rh]

Theorem (balanced_rate_max). *Balanced Rate Max.* [Platonic: balanced_rate_max, domain: resonance_algebra_rh]

Theorem (diamond_le_one). *Diamond Le One.* [Platonic: diamond_le_one, domain: resonance_algebra_rh]

Theorem (diamond_pos). *Diamond Pos.* [Platonic: diamond_pos, domain: resonance_algebra_rh]

Theorem (phi_nonneg). *Phi Nonneg.* [Platonic: phi_nonneg, domain: resonance_algebra_rh]

Theorem (page_gap_positive). *Page Gap Positive.* [Platonic: page_gap_positive, domain: resonance_algebra_rh]

Theorem (siegel_diamond_from_gap). *Siegel Diamond From Gap.* [Platonic: siegel_diamond_from_gap, domain: resonance_algebra_rh]

Theorem (siegel_diamond_upper). *Siegel Diamond Upper.* [Platonic: siegel_diamond_upper, domain: resonance_algebra_rh]

Theorem (repulsion_forces_grh). *Repulsion Forces Grh.* [Platonic: repulsion_forces_grh, domain: resonance_algebra_rh]

Theorem (diamond_gap). *Diamond Gap.* [Platonic: diamond_gap, domain: resonance_algebra_rh]

Theorem (bad_fraction_small). *Bad Fraction Small.* [Platonic: bad_fraction_small, domain: resonance_algebra_rh]

Theorem (loss_nn). *Loss Nn.* [Platonic: loss_nn, domain: resonance_algebra_rh]

Theorem (loss_le1). *Loss Le1.* [Platonic: loss_le1, domain: resonance_algebra_rh]

Theorem (loss_max_at_half). *Loss Max At Half.* [Platonic: loss_max_at_half, domain: resonance_algebra_rh]

Theorem (gradient_zero_at_half). *Gradient Zero At Half.* [Platonic: gradient_zero_at_half, domain: resonance_algebra_rh]

Theorem (gradient_pos_left). *Gradient Pos Left.* [Platonic: gradient_pos_left, domain: resonance_algebra_rh]

Theorem (gradient_neg_right). *Gradient Neg Right.* [Platonic: gradient_neg_right, domain: resonance_algebra_rh]

Theorem (diamond_concavity). *Diamond Concavity.* [Platonic: diamond_concavity, domain: resonance_algebra_rh]

Theorem (diamond_symmetric). *Diamond Symmetric.* [Platonic: diamond_symmetric, domain: resonance_algebra_rh]

Theorem (sv_diamond_nn). *Sv Diamond Nn.* [Platonic: sv_diamond_nn, domain: resonance_algebra_rh]

Theorem (sv_diamond_le1). *Sv Diamond Le1.* [Platonic: sv_diamond_le1, domain: resonance_algebra_rh]

Theorem (decay_diamond_nn). *Decay Diamond Nn.* [Platonic: decay_diamond_nn, domain: resonance_algebra_rh]

Theorem (decay_diamond_le1). *Decay Diamond Le1*. [Platonic: decay_diamond_le1, domain: resonance_algebra_rh]

Theorem (rapid_decay_zero). *Rapid Decay Zero*. [Platonic: rapid_decay_zero, domain: resonance_algebra_rh]

Theorem (no_decay_zero). *No Decay Zero*. [Platonic: no_decay_zero, domain: resonance_algebra_rh]

Theorem (half_decay_max). *Half Decay Max*. [Platonic: half_decay_max, domain: resonance_algebra_rh]

Theorem (decay_symmetry). *Decay Symmetry*. [Platonic: decay_symmetry, domain: resonance_algebra_rh]

Theorem (energy_diamond_nn). *Energy Diamond Nn*. [Platonic: energy_diamond_nn, domain: resonance_algebra_rh]

Theorem (energy_diamond_le1). *Energy Diamond Le1*. [Platonic: energy_diamond_le1, domain: resonance_algebra_rh]

Theorem (all_low_zero). *All Low Zero*. [Platonic: all_low_zero, domain: resonance_algebra_rh]

Theorem (all_high_zero). *All High Zero*. [Platonic: all_high_zero, domain: resonance_algebra_rh]

Theorem (equal_partition_max). *Equal Partition Max*. [Platonic: equal_partition_max, domain: resonance_algebra_rh]

Theorem (uncert_diamond_nn). *Uncert Diamond Nn*. [Platonic: uncert_diamond_nn, domain: resonance_algebra_rh]

Theorem (uncert_diamond_le1). *Uncert Diamond Le1*. [Platonic: uncert_diamond_le1, domain: resonance_algebra_rh]

Theorem (min_uncert_zero). *Min Uncert Zero*. [Platonic: min_uncert_zero, domain: resonance_algebra_rh]

Theorem (max_uncert_zero). *Max Uncert Zero*. [Platonic: max_uncert_zero, domain: resonance_algebra_rh]

Theorem (scale_diamond_nn). *Scale Diamond Nn*. [Platonic: scale_diamond_nn, domain: resonance_algebra_rh]

Theorem (scale_diamond_le1). *Scale Diamond Le1*. [Platonic: scale_diamond_le1, domain: resonance_algebra_rh]

Theorem (single_scale_zero). *Single Scale Zero*. [Platonic: single_scale_zero, domain: resonance_algebra_rh]

Theorem (balanced_scale_max). *Balanced Scale Max*. [Platonic: balanced_scale_max, domain: resonance_algebra_rh]

Theorem (lp_diamond_nn). *Lp Diamond Nn*. [Platonic: lp_diamond_nn, domain: resonance_algebra_rh]

Theorem (lp_diamond_le1). *Lp Diamond Le1*. [Platonic: lp_diamond_le1, domain: resonance_algebra_rh]

Theorem (concentrated_block_zero). *Concentrated Block Zero*. [Platonic: concentrated_block_zero, domain: resonance_algebra_rh]

Theorem (dominant_block_zero). *Dominant Block Zero*. [Platonic: dominant_block_zero, domain: resonance_algebra_rh]

Theorem (balanced_block_max). *Balanced Block Max*. [Platonic: balanced_block_max, domain: resonance_algebra_rh]

Theorem (z2_fixed_point). *Z2 Fixed Point*. [Platonic: z2_fixed_point, domain: resonance_algebra_rh]

Theorem (z2_involutive). *Z2 Involutive*. [Platonic: z2_involutive, domain: resonance_algebra_rh]

3. Bounds and Estimates

Theorem (form_factor_bounded). *Form Factor Bounded*. [Platonic: form_factor_bounded, domain: resonance_algebra_rh]

Theorem (mode_bounded_by_sigma_max). *Mode Bounded By Sigma Max*. [Platonic: mode_bounded_by_sigma_max, domain: resonance_algebra_rh]

Theorem (mode_bounded_by_max). *Mode Bounded By Max*. [Platonic: mode_bounded_by_max, domain: resonance_algebra_rh]

Theorem (latent_number_lower_bound). *Latent Number Lower Bound*. [Platonic: latent_number_lower_bound, domain: resonance_algebra_rh]

Theorem (boundary_diamond_zero_left). *Boundary Diamond Zero Left*. [Platonic: boundary_diamond_zero_left, domain: resonance_algebra_rh]

Theorem (boundary_diamond_zero_right). *Boundary Diamond Zero Right*. [Platonic: boundary_diamond_zero_right, domain: resonance_algebra_rh]

Theorem (total_padic_bounded). *Total Padic Bounded*. [Platonic: total_padic_bounded, domain: resonance_algebra_rh]

Theorem (level_diamond_bounded). *Level Diamond Bounded*. [Platonic: level_diamond_bounded, domain: resonance_algebra_rh]

Theorem (relative_diamond_bounded). *Relative Diamond Bounded*. [Platonic: relative_diamond_bounded, domain: resonance_algebra_rh]

Theorem (entropy_bounded_by_max). *Entropy Bounded By Max*. [Platonic: entropy_bounded_by_max, domain: resonance_algebra_rh]

Theorem (off_line_bound). *Off Line Bound*. [Platonic: off_line_bound, domain: resonance_algebra_rh]

Theorem (stability_boundary_max). *Stability Boundary Max*. [Platonic: stability_boundary_max, domain: resonance_algebra_rh]

Theorem (goldfeld_bounded). *Goldfeld Bounded*. [Platonic: goldfeld_bounded, domain: resonance_algebra_rh]

Theorem (avg_diamond_bounded). *Avg Diamond Bounded*. [Platonic: avg_diamond_bounded, domain: resonance_algebra_rh]

Theorem (variety_diamond_bounded). *Variety Diamond Bounded*. [Platonic: variety_diamond_bounded, domain: resonance_algebra_rh]

Theorem (boundary_hodge_zero). *Boundary Hodge Zero*. [Platonic: boundary_hodge_zero, domain: resonance_algebra_rh]

Theorem (higher_verification_tighter_bound). *Higher Verification Tighter Bound*. [Platonic: higher_verification_tighter_bound, domain: resonance_algebra_rh]

Theorem (pair_corr_bounded). *Pair Corr Bounded*. [Platonic: pair_corr_bounded, domain: resonance_algebra_rh]

Theorem (diamond_improves_smooth_estimate). *Diamond Improves Smooth Estimate*. [Platonic: diamond_improves_smooth_estimate, domain: resonance_algebra_rh]

Theorem (holevo_bounded_by_diamond). *Holevo Bounded By Diamond*. [Platonic: holevo_bounded_by_diamond, domain: resonance_algebra_rh]

Theorem (entropy_bounded). *Entropy Bounded*. [Platonic: entropy_bounded, domain: resonance_algebra_rh]

Theorem (spectral_ratio_bounded). *Spectral Ratio Bounded*. [Platonic: spectral_ratio_bounded, domain: resonance_algebra_rh]

Theorem (sigma_product_bound). *Sigma Product Bound*. [Platonic: sigma_product_bound, domain: resonance_algebra_rh]

4. Spectral Theory

Theorem (diamond_weighted_le_spectral). *Diamond Weighted Le Spectral*. [Platonic: diamond_weighted_le_spectral, domain: resonance_algebra_rh]

Theorem (grh_weighted_equals_spectral). *Grh Weighted Equals Spectral*. [Platonic: grh_weighted_equals_spectral, domain: resonance_algebra_rh]

Theorem (eigenvalues_ordered). *Eigenvalues Ordered*. [Platonic: eigenvalues_ordered, domain: resonance_algebra_rh]

Theorem (half_eigenvalue_max). *Half Eigenvalue Max*. [Platonic: half_eigenvalue_max, domain: resonance_algebra_rh]

Theorem (res_energy_le_eigenvalue). *Res Energy Le Eigenvalue*. [Platonic: res_energy_le_eigenvalue, domain: resonance_algebra_rh]

Theorem (rh_spectral_ratio_one). *Rh Spectral Ratio One*. [Platonic: rh_spectral_ratio_one, domain: resonance_algebra_rh]

Theorem (hp_qfactor_equals_eigenvalue). *Hp Qfactor Equals Eigenvalue*. [Platonic: hp_qfactor_equals_eigenvalue, domain: resonance_algebra_rh]

Theorem (optimal_spectral_reg). *Optimal Spectral Reg*. [Platonic: optimal_spectral_reg, domain: resonance_algebra_rh]

5. Stability Results

Theorem (diamond_stability). *Diamond Stability*. [Platonic: diamond_stability, domain: resonance_algebra_rh]

Theorem (marginal_stable_zero). *Marginal Stable Zero*. [Platonic: marginal_stable_zero, domain: resonance_algebra_rh]

Theorem (max_stable_zero). *Max Stable Zero*. [Platonic: max_stable_zero, domain: resonance_algebra_rh]

Theorem (stability_diamond_nn). *Stability Diamond Nn*. [Platonic: stability_diamond_nn, domain: resonance_algebra_rh]

Theorem (stability_diamond_le1). *Stability Diamond Le1*. [Platonic: stability_diamond_le1, domain: resonance_algebra_rh]

Theorem (totally_stable_zero). *Totally Stable Zero*. [Platonic: totally_stable_zero, domain: resonance_algebra_rh]

Theorem (max_unstable_zero). *Max Unstable Zero*. [Platonic: max_unstable_zero, domain: resonance_algebra_rh]

6. Convergence Results

Theorem (converged_zero). *Converged Zero*. [Platonic: converged_zero, domain: resonance_algebra_rh]

Theorem (diamond_converges_to_true). *Diamond Converges To True*. [Platonic: diamond_converges_to_true, domain: resonance_algebra_rh]

Theorem (thermo_limit_diamond_collapse). *Thermo Limit Diamond Collapse*. [Platonic: thermo_limit_diamond_collapse, domain: resonance_algebra_rh]

Theorem (precision_limit). *Precision Limit*. [Platonic: precision_limit, domain: resonance_algebra_rh]

Theorem (mart_converges_zero_diamond). *Mart Converges Zero Diamond*. [Platonic: mart_converges_zero_diamond, domain: resonance_algebra_rh]

Theorem (mart_converges_one_diamond). *Mart Converges One Diamond*. [Platonic: mart_converges_one_diamond, domain: resonance_algebra_rh]

7. Cross-Domain Bridges

Theorem (modularity_grh_transfer). *Modularity Grh Transfer*. [Platonic: modularity_grh_transfer, domain: resonance_algebra_rh]

Theorem (transfer_diamond_improves). *Transfer Diamond Improves*. [Platonic: transfer_diamond_improves, domain: resonance_algebra_rh]

Theorem (grh_transfer). *Grh Transfer*. [Platonic: grh_transfer, domain: resonance_algebra_rh]

8. Main Theorems

Theorem (main_conjecture_lambda). *Main Conjecture Lambda*. [Platonic: main_conjecture_lambda, domain: resonance_algebra_rh]

Theorem (central_diamond_zero). *Central Diamond Zero*. [Platonic: central_diamond_zero, domain: resonance_algebra_rh]

9. Regularity

Theorem (smooth_zero). *Smooth Zero*. [Platonic: smooth_zero, domain: resonance_algebra_rh]

10. Formal Framework

Hypotheses

- H_char_val: Char Val
- H_cv_nn: Cv Nn
- H_cv_le1: Cv Le1
- H_char_diamond: Char Diamond
- H_planch: Planch
- H_pl_nn: Pl Nn
- H_pl_le1: Pl Le1
- H_planch_diamond: Planch Diamond
- H_branch: Branch
- H_br_nn: Br Nn
- H_br_le1: Br Le1
- H_branch_diamond: Branch Diamond
- H_hw_nn: Hw Nn
- H_hw_le1: Hw Le1
- H_Resonance: Resonance
- H_damping: Damping
- H_freq: Freq
- H_zeta_mode: Zeta Mode
- H_conj_idx: Conj Idx
- H_func_eq: Func Eq
- H_freq_ordered: Freq Ordered
- H_spacing: Spacing
- H_local_density: Local Density
- H_norm_spacing: Norm Spacing
- H_avg_density: Avg Density
- H_davg_pos: Davg Pos
- H_pair_corr: Pair Corr
- H_gue_repulsion: Gue Repulsion
- H_r2_symmetric: R2 Symmetric
- H_r2_bounded: R2 Bounded
- H_r2_large: R2 Large
- H_uniform: Uniform

- H_ri_nn: Ri Nn
- H_ri_le1: Ri Le1
- H_pd_nn: Pd Nn
- H_pd_le1: Pd Le1
- H_sm_nn: Sm Nn
- H_sm_le1: Sm Le1
- H_sg_nn: Sg Nn
- H_sg_le1: Sg Le1
- H_kr_nn: Kr Nn
- H_kr_le1: Kr Le1
- H_spacing: Spacing
- H_sp_pos: Sp Pos
- H_avg_sp_one: Avg Sp One
- H_pair_corr: Pair Corr
- H_r2_nonneg: R2 Nonneg
- H_r2_le_two: R2 Le Two
- H_level_repulsion: Level Repulsion
- H_decorrelation: Decorrelation
- H_diamond_fn: Diamond Fn
- H_dd_le1: Dd Le1
- H_dd_nonneg: Dd Nonneg
- H_diamond_next: Diamond Next
- H_ddn_le1: Ddn Le1
- H_lip_pos: Lip Pos
- H_diamond_lip: Diamond Lip
- H_diamond_lip_neg: Diamond Lip Neg
- H_L_pos: L Pos
- H_delta3_gue: Delta3 Gue
- H_form_factor: Form Factor
- H_ff_nonneg: Ff Nonneg
- H_ff_le1: Ff Le1
- H_ff_zero: Ff Zero
- H_sd_nonneg: Sd Nonneg
- H_sd_le1: Sd Le1
- H_sd_gue: Sd Gue
- H_Resonance: Resonance
- H_damping: Damping
- H_freq: Freq
- H_amp: Amp
- H_zeta_mode: Zeta Mode
- H_conj_idx: Conj Idx
- H_func_eq: Func Eq
- H_strip_pos: Strip Pos
- H_strip_lt1: Strip Lt1
- H_freq_pos: Freq Pos
- H_amp_pos: Amp Pos
- H_freq_conjugate: Freq Conjugate
- H_mode_norm_sq: Mode Norm Sq

- H_sigma_max: Sigma Max
- H_k_max: K Max
- H_sigma_max_achieved: Sigma Max Achieved
- H_uniform: Uniform
- H_pair_max: Pair Max
- H_mode_count: Mode Count
- H_nc_nonneg: Nc Nonneg
- H_nc_mono: Nc Mono
- H_inv_norm_sum: Inv Norm Sum
- H_inv_norm_bound: Inv Norm Bound
- H_B_pos: B Pos
- H_inv_sum_bounded: Inv Sum Bounded
- H_error: Error
- H_err_nonneg: Err Nonneg
- H_betti: Betti
- H_betti_nn: Betti Nn
- H_tb_pos: Tb Pos
- H_norm_betti: Norm Betti
- H_nb_nn: Nb Nn
- H_nb_le1: Nb Le1
- H_betti_diamond: Betti Diamond
- H_dim_pos: Dim Pos
- H_spec_param: Spec Param
- H_sp_nn: Sp Nn
- H_sp_le1: Sp Le1
- H_spec_diamond: Spec Diamond
- H_weil_eig: Weil Eig
- H_we_nn: We Nn
- H_we_le1: We Le1
- H_weil_diamond: Weil Diamond
- H_persist: Persist
- H_pp_nn: Pp Nn
- H_pp_le1: Pp Le1
- H_persist_diamond: Persist Diamond
- H_morse_idx: Morse Idx
- H_mi_nn: Mi Nn
- H_mi_le1: Mi Le1
- H_morse_diamond: Morse Diamond
- H_Resonance: Resonance
- H_damping: Damping
- H_amp: Amp
- H_zeta_mode: Zeta Mode
- H_conj_idx: Conj Idx
- H_func_eq: Func Eq
- H_strip_pos: Strip Pos
- H_strip_lt1: Strip Lt1
- H_sigma_max: Sigma Max
- H_sigma_max_le1: Sigma Max Le1

- H_sigma_max_pos: Sigma Max Pos
- H_k_max: K Max
- H_sigma_max_achieved: Sigma Max Achieved
- H_error_exp: Error Exp
- H_uniform: Uniform
- H_sigma_p: Sigma P
- H_sig_ge_zero: Sig Ge Zero
- H_sig_le1: Sig Le1
- H_diamond_p: Diamond P
- H_lambda_nn: Lambda Nn
- H_mu_nn: Mu Nn
- H_ferrero_washington: Ferrero Washington
- H_tpd_nn: Tpd Nn
- H_tpd_le_lambda: Tpd Le Lambda
- H_Linv_pos: Linv Pos
- H_ss_pos: Ss Pos
- H_la_nn: La Nn
- H_lal_nn: Lal Nn
- H_main_conj: Main Conj
- H_level_diamond: Level Diamond
- H_ld_nn: Ld Nn
- H_ld_le1: Ld Le1
- H_ld_stable: Ld Stable
- H_mult: Mult
- H_mult_pos: Mult Pos
- H_spec_param: Spec Param
- H_rho_ge_half: Rho Ge Half
- H_rho_lt1: Rho Lt1
- H_spec_diamond: Spec Diamond
- H_tempered: Tempered
- H_temp_binary: Temp Binary
- H_temp_le1: Temp Le1
- H_test_fn: Test Fn
- H_hf_bound: Hf Bound
- H_length: Length
- H_len_pos: Len Pos
- H_st_pos: St Pos
- H_gt_pos: Gt Pos
- H_trace_formula: Trace Formula
- H_period: Period
- H_per_nn: Per Nn
- H_rs_ge_half: Rs Ge Half
- H_rs_lt1: Rs Lt1
- H_rl_ge_half: Rl Ge Half
- H_rl_lt1: Rl Lt1
- H_lift_improves: Lift Improves
- H_degree_pos: Degree Pos
- H_sigma_pi: Sigma Pi

- H_sig_ge_half: Sig Ge Half
- H_sig_lt1: Sig Lt1
- H_diamond_pi: Diamond Pi
- H_rho_pi_ge_half: Rho Pi Ge Half
- H_rho_pi_lt1: Rho Pi Lt1
- H_rho_pi_sup: Rho Pi Sup
- H_comp_lat: Comp Lat
- H_clat_ge_half: Clat Ge Half
- H_clat_lt1: Clat Lt1
- H_comp_diamond: Comp Diamond
- H_rho_rs_ge_half: Rho Rs Ge Half
- H_rho_rs_lt1: Rho Rs Lt1
- H_rs_bound: Rs Bound
- H_local_theta: Local Theta
- H_theta_max_nn: Theta Max Nn
- H_theta_max_lt_half: Theta Max Lt Half
- H_theta_bound: Theta Bound
- H_theta_nn: Theta Nn
- H_local_diamond: Local Diamond
- H_cond_pos: Cond Pos
- H_density_pos: Density Pos
- H_cond2_pos: Cond2 Pos
- H_density2_pos: Density2 Pos
- H_bigger_cond_more_zeros: Bigger Cond More Zeros
- H_lift_ge_half: Lift Ge Half
- H_lift_lt1: Lift Lt1
- H_lift_bound: Lift Bound
- H_se_nn: Se Nn
- H_se_le1: Se Le1
- H_ef_weight: Ef Weight
- H_ew_nn: Ew Nn
- H_ew_le1: Ew Le1
- H_ef_diamond: Ef Diamond
- H_bv_nn: Bv Nn
- H_bv_le1: Bv Le1
- H_szd_nn: Szd Nn
- H_szd_le1: Szd Le1
- H_ls_nn: Ls Nn
- H_ls_le1: Ls Le1
- H_Resonance: Resonance
- H_damping: Damping
- H_zeta_mode: Zeta Mode
- H_conj_idx: Conj Idx
- H_func_eq: Func Eq
- H_strip_pos: Strip Pos
- H_strip_lt1: Strip Lt1
- H_order_param: Order Param
- H_susceptibility: Susceptibility

- H_corr_length: Corr Length
- H_uniform: Uniform
- H_damp_entropy: Damp Entropy
- H_ent_max_val: Ent Max Val
- H_ent_concave: Ent Concave
- H_ent_symmetric: Ent Symmetric
- H_f_nn: F Nn
- H_f_le1: F Le1
- H_nq_nn: Nq Nn
- H_nq_le1: Nq Le1
- H_kq_nn: Kq Nn
- H_kq_le1: Kq Le1
- H_aq_nn: Aq Nn
- H_aq_le1: Aq Le1
- H_ext_rank: Ext Rank
- H_er_nn: Er Nn
- H_er_le1: Er Le1
- H_ext_diamond: Ext Diamond
- H_Resonance: Resonance
- H_damping: Damping
- H_freq: Freq
- H_zeta_mode: Zeta Mode
- H_conj_idx: Conj Idx
- H_func_eq: Func Eq
- H_strip_pos: Strip Pos
- H_strip_lt1: Strip Lt1
- H_freq_pos: Freq Pos
- H_sigma_max: Sigma Max
- H_k_max: K Max
- H_sigma_max_achieved: Sigma Max Achieved
- H_zfr_width: Zfr Width
- H_zfr_pos: Zfr Pos
- H_zfr_constraint: Zfr Constraint
- H_zfr_lt_half: Zfr Lt Half
- H_delta_min_pos: Delta Min Pos
- H_zfr_uniform: Zfr Uniform
- H_dvp_const: Dvp Const
- H_c1_pos: C1 Pos
- H_vk_const: Vk Const
- H_c2_pos: C2 Pos
- H_vk_ge_dvp: Vk Ge Dvp
- H_off_count: Off Count
- H_oc_nonneg: Oc Nonneg
- H_oc_mono: Oc Mono
- H_on_line_count: On Line Count
- H_total_count: Total Count
- H_conrey: Conrey
- H_tc_pos: Tc Pos

- H_lc_le_tc: Lc Le Tc
- H_conrey_bound: Conrey Bound
- H_rh_all_on_line: Rh All On Line
- H_gap_def: Gap Def
- H_uniform: Uniform
- H_ot_nn: Ot Nn
- H_ot_le1: Ot Le1
- H_dr_nn: Dr Nn
- H_dr_le1: Dr Le1
- H_ly_nn: Ly Nn
- H_ly_le1: Ly Le1
- H_sp_nn: Sp Nn
- H_sp_le1: Sp Le1
- H_ee_nn: Ee Nn
- H_ee_le1: Ee Le1
- H_Character: Character
- H_Resonance: Resonance
- H_char_idx: Char Idx
- H_modulus: Modulus
- H_mod_pos: Mod Pos
- H_char_mode: Char Mode
- H_damping: Damping
- H_freq: Freq
- H_char_conj: Char Conj
- H_char_func_eq: Char Func Eq
- H_char_strip_pos: Char Strip Pos
- H_char_strip_lt1: Char Strip Lt1
- H_char_latent: Char Latent
- H_cl_upper: Cl Upper
- H_cl_achieved_idx: Cl Achieved Idx
- H_cl_achieved: Cl Achieved
- H_char_order: Char Order
- H_grh: Grh
- H_rho_global: Rho Global
- H_worst_char: Worst Char
- H_rho_global_achieved: Rho Global Achieved
- H_siegel_zero_exists: Siegel Zero Exists
- H_siegel_lt1: Siegel Lt1
- H_siegel_is_latent: Siegel Is Latent
- H_avg_latent: Avg Latent
- H_bv_bound: Bv Bound
- H_minor_quality: Minor Quality
- H_char_product: Char Product
- H_latent_submult: Latent Submult
- H_gap_nn: Gap Nn
- H_gap_le1: Gap Le1
- H_gv_nn: Gv Nn
- H_gv_le1: Gv Le1

- H_bar_nn: Bar Nn
- H_bar_le1: Bar Le1
- H_slack: Slack
- H_sl_nn: Sl Nn
- H_sl_le1: Sl Le1
- H_slack_diamond: Slack Diamond
- H_prime: Prime
- H_prime_pos: Prime Pos
- H_approx_damp: Approx Damp
- H_true_damp: True Damp
- H_true_strip_pos: True Strip Pos
- H_true_strip_lt1: True Strip Lt1
- H_approx_error: Approx Error
- H_error_bound: Error Bound
- H_eb_pos: Eb Pos
- H_error_le_bound: Error Le Bound
- H_error_le_bound_above: Error Le Bound Above
- H_eb_decreasing: Eb Decreasing
- H_eb_mono: Eb Mono
- H_diamond_approx: Diamond Approx
- H_diamond_true: Diamond True
- H_rh: Rh
- H_diamond_error: Diamond Error
- H_lip_val: Lip Val
- H_derr_bounded: Derr Bounded
- H_derr_bounded_above: Derr Bounded Above
- H_prime_contrib: Prime Contrib
- H_pc_pos: Pc Pos
- H_pc_decreasing: Pc Decreasing
- H_first_prime_dominant: First Prime Dominant
- H_mr_nn: Mr Nn
- H_mr_le1: Mr Le1
- H_stab_nn: Stab Nn
- H_stab_le1: Stab Le1
- H_fork: Fork
- H_fk_nn: Fk Nn
- H_fk_le1: Fk Le1
- H_fork_diamond: Fork Diamond
- H_qd_nn: Qd Nn
- H_qd_le1: Qd Le1
- H_ind_nn: Ind Nn
- H_ind_le1: Ind Le1
- H_ly_angle: Ly Angle
- H_la_nn: La Nn
- H_la_le1: La Le1
- H_ly_diamond: Ly Diamond
- H_fisher: Fisher
- H_fi_nn: Fi Nn

- H_{fi_le1} : Fi Le1
- $H_{fisher_diamond}$: Fisher Diamond
- H_{op_nn} : Op Nn
- H_{op_le1} : Op Le1
- H_{an_nn} : An Nn
- H_{an_le1} : An Le1
- H_{rg_eig} : Rg Eig
- H_{rg_nn} : Rg Nn
- H_{rg_le1} : Rg Le1
- $H_{rg_diamond}$: Rg Diamond
- H_{chrom} : Chrom
- H_{cr_nn} : Cr Nn
- H_{cr_le1} : Cr Le1
- $H_{chrom_diamond}$: Chrom Diamond
- $H_{matroid_rank}$: Matroid Rank
- H_{mr_nn} : Mr Nn
- H_{mr_le1} : Mr Le1
- $H_{matroid_diamond}$: Matroid Diamond
- H_{lc_coeff} : Lc Coeff
- H_{lc_nn} : Lc Nn
- H_{lc_le1} : Lc Le1
- $H_{lc_diamond}$: Lc Diamond
- H_{td_nn} : Td Nn
- H_{td_le1} : Td Le1
- H_{rp_nn} : Rp Nn
- H_{rp_le1} : Rp Le1
- H_{fi_nn} : Fi Nn
- H_{fi_le1} : Fi Le1
- H_{kl_nn} : Kl Nn
- H_{kl_le1} : Kl Le1
- H_{eff_nn} : Eff Nn
- H_{eff_le1} : Eff Le1
- H_{mi_nn} : Mi Nn
- H_{mi_le1} : Mi Le1
- H_{geo_nn} : Geo Nn
- H_{geo_le1} : Geo Le1
- H_{sigma_ec} : Sigma Ec
- $H_{sig_ge_half}$: Sig Ge Half
- H_{sig_lt1} : Sig Lt1
- $H_{diamond_ec}$: Diamond Ec
- H_{ran_nn} : Ran Nn
- H_{ralg_nn} : Ralg Nn
- H_{bsd} : Bsd
- H_{cond_pos} : Cond Pos
- H_{zc_pos} : Zc Pos
- $H_{goldfeld}$: Goldfeld
- H_{avg_nn} : Avg Nn
- H_{lp_pos} : Lp Pos

- H_hh_pos: Hh Pos
- H_per_pos: Per Pos
- H_re_ge_half: Re Ge Half
- H_re_lt1: Re Lt1
- H_rf_ge_half: Rf Ge Half
- H_rf_lt1: Rf Lt1
- H_modularity: Modularity
- H_avgd_nn: Avgd Nn
- H_avgd_le1: Avgd Le1
- H_rho_M_ge_half: Rho M Ge Half
- H_rho_M_lt1: Rho M Lt1
- H_dual_eq: Dual Eq
- H_dual_ge_half: Dual Ge Half
- H_dual_lt1: Dual Lt1
- H_rho_N_ge_half: Rho N Ge Half
- H_rho_N_lt1: Rho N Lt1
- H_rho_MN_ge_half: Rho Mn Ge Half
- H_rho_MN_lt1: Rho Mn Lt1
- H_tensor_bound: Tensor Bound
- H_twist_eq: Twist Eq
- H_twist_ge_half: Twist Ge Half
- H_twist_lt1: Twist Lt1
- H_weight_lat: Weight Lat
- H_wlat_ge_half: Wlat Ge Half
- H_wlat_lt1: Wlat Lt1
- H_weight_diamond: Weight Diamond
- H_coh_diamond: Coh Diamond
- H_cdi_pos: Cdi Pos
- H_cdi_le1: Cdi Le1
- H_td_pos: Td Pos
- H_td_le1: Td Le1
- H_td_min: Td Min
- H_hodge_param: Hodge Param
- H_hp_nn: Hp Nn
- H_hp_le1: Hp Le1
- H_hodge_diamond: Hodge Diamond
- H_sh_nn: Sh Nn
- H_sh_le1: Sh Le1
- H_sheaf_coh: Sheaf Coh
- H_sc_nn: Sc Nn
- H_sc_le1: Sc Le1
- H_sheaf_diamond: Sheaf Diamond
- H_per_nn: Per Nn
- H_per_le1: Per Le1
- H_ll_nn: Ll Nn
- H_ll_le1: Ll Le1
- H_sigma_num: Sigma Num
- H_gamma_num: Gamma Num

- H_sig_ge_half: Sig Ge Half
- H_sig_le1: Sig Le1
- H_gam_pos: Gam Pos
- H_diamond_num: Diamond Num
- H_mean_pos: Mean Pos
- H_mean_le1: Mean Le1
- H_rh_verified: Rh Verified
- H_var_nn: Var Nn
- H_ver_pos: Ver Pos
- H_vc_pos: Vc Pos
- H_bc_pos: Bc Pos
- H_bc2_pos: Bc2 Pos
- H_vh2_pos: Vh2 Pos
- H_more_zeros_better: More Zeros Better
- H_eps_pos: Eps Pos
- H_eps_small: Eps Small
- H_sig_interval: Sig Interval
- H_sig_interval_upper: Sig Interval Upper
- H_Resonance: Resonance
- H_damping: Damping
- H_freq: Freq
- H_zeta_mode: Zeta Mode
- H_eigenvalue: Eigenvalue
- H_spectral_corr: Spectral Corr
- H_freq_is_ev: Freq Is Ev
- H_ev_pos: Ev Pos
- H_raw_spacing: Raw Spacing
- H_spacing_pos: Spacing Pos
- H_mean_spacing: Mean Spacing
- H_dm_pos: Dm Pos
- H_norm_spacing: Norm Spacing
- H_gue_repulsion_rate: Gue Repulsion Rate
- H_gue_p0: Gue P0
- H_gue_nonneg: Gue Nonneg
- H_pair_corr: Pair Corr
- H_r2_zero: R2 Zero
- H_r2_le1: R2 Le1
- H_num_var: Num Var
- H_sig2_pos: Sig2 Pos
- H_gue_rigid: Gue Rigid
- H_state: State
- H_st_nn: St Nn
- H_st_le1: St Le1
- H_state_diamond: State Diamond
- H_vn_nn: Vn Nn
- H_vn_le1: Vn Le1
- H_sm_nn: Sm Nn
- H_sm_le1: Sm Le1

- H_ktrace: Ktrace
- H_kt_nn: Kt Nn
- H_kt_le1: Kt Le1
- H_kt_diamond: Kt Diamond
- H_nc_nn: Nc Nn
- H_nc_le1: Nc Le1
- H_curv: Curv
- H_kk_nn: Kk Nn
- H_kk_le1: Kk Le1
- H_curv_diamond: Curv Diamond
- H_ric_nn: Ric Nn
- H_ric_le1: Ric Le1
- H_lapl_eig: Lapl Eig
- H_le_nn: Le Nn
- H_le_le1: Le Le1
- H_lapl_diamond: Lapl Diamond
- H_ch_nn: Ch Nn
- H_ch_le1: Ch Le1
- H_hz_nn: Hz Nn
- H_hz_le1: Hz Le1
- H_dmin_pos: Dmin Pos
- H_dmin_le1: Dmin Le1
- H_theta_ge_half: Theta Ge Half
- H_theta_lt1: Theta Lt1
- H_kb_pos: Kb Pos
- H_sm_pos: Sm Pos
- H_sm_le1: Sm Le1
- H_margin_from_theta: Margin From Theta
- H_sc_pos: Sc Pos
- H_es_pos: Es Pos
- H_se_nn: Se Nn
- H_se2_nn: Se2 Nn
- H_dm2_pos: Dm2 Pos
- H_better_d_better_smooth: Better D Better Smooth
- H_char_d: Char D
- H_cd_pos: Cd Pos
- H_cd_le1: Cd Le1
- H_mcd_pos: Mcd Pos
- H_mcd_le1: Mcd Le1
- H_mcd_floor: Mcd Floor
- H_wb_pos: Wb Pos
- H_wb2_pos: Wb2 Pos
- H_better_d_better_witness: Better D Better Witness
- H_lyap: Lyap
- H_ly_nn: Ly Nn
- H_ly_le1: Ly Le1
- H_lyap_diamond: Lyap Diamond
- H_hn_nn: Hn Nn

- H_hn_le1: Hn Le1
- H_mu_nn: Mu Nn
- H_mu_le1: Mu Le1
- H_ruelle_zeros: Ruelle Zeros
- H_rz_nn: Rz Nn
- H_rz_le1: Rz Le1
- H_ruelle_diamond: Ruelle Diamond
- H_mr_nn: Mr Nn
- H_mr_le1: Mr Le1
- H_sig_nn: Sig Nn
- H_sig_le1: Sig Le1
- H_cp_nn: Cp Nn
- H_cp_le1: Cp Le1
- H_fid_nn: Fid Nn
- H_fid_le1: Fid Le1
- H_diamond_sys: Diamond Sys
- H_dss_nn: Dss Nn
- H_dss_le1: Dss Le1
- H_purity_sys: Purity Sys
- H_avgd_nn: Avgd Nn
- H_avgd_le1: Avgd Le1
- H_holevo_nn: Holevo Nn
- H_holevo_le_avgd: Holevo Le Avgd
- H_Resonance: Resonance
- H_damping: Damping
- H_amp: Amp
- H_zeta_mode: Zeta Mode
- H_conj_idx: Conj Idx
- H_func_eq: Func Eq
- H_strip_pos: Strip Pos
- H_strip_lt1: Strip Lt1
- H_amp_pos: Amp Pos
- H_uniform: Uniform
- H_order_param: Order Param
- H_sigma_max: Sigma Max
- H_k_max: K Max
- H_sigma_max_achieved: Sigma Max Achieved
- H_energy: Energy
- H_entropy: Entropy
- H_ent_concave: Ent Concave
- H_deg_pos: Deg Pos
- H_sigma_exc: Sigma Exc
- H_sig_ge_half: Sig Ge Half
- H_sig_lt1: Sig Lt1
- H_diamond_exc: Diamond Exc
- H_rho_exc_ge_half: Rho Exc Ge Half
- H_rho_exc_lt1: Rho Exc Lt1
- H_gln_ge_half: Gln Ge Half

- H_gln_lt1: Gln Lt1
- H_transfer_bound: Transfer Bound
- H_ad_ge1: Ad Ge1
- H_as_nn: As Nn
- H_as_lt_half: As Lt Half
- H_adj_ge_half: Adj Ge Half
- H_adj_lt1: Adj Lt1
- H_adj_le_exc: Adj Le Exc
- H_ws_pos: Ws Pos
- H_w1_ge_half: W1 Ge Half
- H_w1_lt1: W1 Lt1
- H_w2_ge_half: W2 Ge Half
- H_w2_lt1: W2 Lt1
- H_weyl_orbit: Weyl Orbit
- H_degF_pos: Degf Pos
- H_rhoF_ge_half: Rhof Ge Half
- H_rhoF_lt1: Rhof Lt1
- H_Keven: Keven
- H_Kodd: Kodd
- H_ke_pos: Ke Pos
- H_ko_pos: Ko Pos
- H_regulator: Regulator
- H_reg_pos: Reg Pos
- H_zeta_val: Zeta Val
- H_zval_pos: Zval Pos
- H_cn_pos: Cn Pos
- H_reg_F_pos: Reg F Pos
- H_disc_pos: Disc Pos
- H_wu_pos: Wu Pos
- H_rhoE_ge_half: Rhoe Ge Half
- H_rhoE_lt1: Rhoe Lt1
- H_ext_worse: Ext Worse
- H_bd_pos: Bd Pos
- H_lc_pos: Lc Pos
- H_rp_pos: Rp Pos
- H_rho_f_ge_half: Rho F Ge Half
- H_rho_f_lt1: Rho F Lt1
- H_rho_g_ge_half: Rho G Ge Half
- H_rho_g_lt1: Rho G Lt1
- H_rho_fg_ge_half: Rho Fg Ge Half
- H_rho_fg_lt1: Rho Fg Lt1
- H_product_bound: Product Bound
- H_sym_lat: Sym Lat
- H_slat_ge_half: Slat Ge Half
- H_slat_lt1: Slat Lt1
- H_sym_diamond: Sym Diamond
- H_rho_bc_ge_half: Rho Bc Ge Half
- H_rho_bc_lt1: Rho Bc Lt1

- H_rho_tw_ge_half: Rho Tw Ge Half
- H_rho_tw_lt1: Rho Tw Lt1
- H_bc_le_f: Bc Le F
- H_bc_le_tw: Bc Le Tw
- H_Resonance: Resonance
- H_damping: Damping
- H_amp: Amp
- H_zeta_mode: Zeta Mode
- H_conj_idx: Conj Idx
- H_func_eq: Func Eq
- H_strip_pos: Strip Pos
- H_strip_lt1: Strip Lt1
- H_amp_pos: Amp Pos
- H_k0: K0
- H_off_val: Off Val
- H_energy: Energy
- H_below_half: Below Half
- H_sigma2_pos: Sigma2 Pos
- H_sigma2_lt_star: Sigma2 Lt Star
- H_e2_def: E2 Def
- H_e2_pos: E2 Pos
- H_sigma: Sigma
- H_sig_ge_half: Sig Ge Half
- H_sig_lt1: Sig Lt1
- H_diamond: Diamond
- H_phi: Phi
- H_theta_is_sup: Theta Is Sup
- H_theta_ge_half: Theta Ge Half
- H_theta_lt1: Theta Lt1
- H_rh: Rh
- H_rh_theta: Rh Theta
- H_dmin_pos: Dmin Pos
- H_dmin_le1: Dmin Le1
- H_dmin_floor: Dmin Floor
- H_char_lat: Char Lat
- H_clat_ge_half: Clat Ge Half
- H_clat_lt1: Clat Lt1
- H_char_diamond: Char Diamond
- H_glat_is_sup: Glat Is Sup
- H_glat_ge_half: Glat Ge Half
- H_glat_lt1: Glat Lt1
- H_r_nn: R Nn
- H_r_le1: R Le1
- H_d_nn: D Nn
- H_d_le1: D Le1
- H_singleton: Singleton
- H_cp_nn: Cp Nn
- H_cp_le1: Cp Le1

- H_pr_nn: Pr Nn
- H_pr_le1: Pr Le1
- H_weight: Weight
- H_wt_nn: Wt Nn
- H_wt_le1: Wt Le1
- H_wt_diamond: Wt Diamond
- H_beta_gt_half: Beta Gt Half
- H_beta_lt1: Beta Lt1
- H_repulsion: Repulsion
- H_rep_pos: Rep Pos
- H_rep_grows: Rep Grows
- H_mode_energy: Mode Energy
- H_beta2_siegel: Beta2 Siegel
- H_beta2_lt1: Beta2 Lt1
- H_sep_pos: Sep Pos
- H_two_siegel_sep: Two Siegel Sep
- H_eigenvalue: Eigenvalue
- H_sigma_bk: Sigma Bk
- H_sig_ge_half: Sig Ge Half
- H_sig_lt1: Sig Lt1
- H_diamond_bk: Diamond Bk
- H_self_adjoint: Self Adjoint
- H_pt_delta: Pt Delta
- H_delta_nn: Delta Nn
- H_res_energy: Res Energy
- H_ev_pos: Ev Pos
- H_tw_pos: Tw Pos
- H_mw_pos: Mw Pos
- H_tw_le_max: Tw Le Max
- H_ratio_pos: Ratio Pos
- H_ratio_le1: Ratio Le1
- H_Resonance: Resonance
- H_damping: Damping
- H_freq: Freq
- H_zeta_mode: Zeta Mode
- H_eigenvalue: Eigenvalue
- H_spectral_corr: Spectral Corr
- H_freq_is_ev: Freq Is Ev
- H_damp_pos: Damp Pos
- H_gap: Gap
- H_gap_def: Gap Def
- H_gap_pos: Gap Pos
- H_ev_pos: Ev Pos
- H_qfactor: Qfactor
- H_eigsum: Eigsum
- H_eigsum_step: Eigsum Step
- H_Resonance: Resonance
- H_damping: Damping

- H_amp: Amp
- H_zeta_mode: Zeta Mode
- H_conj_idx: Conj Idx
- H_func_eq: Func Eq
- H_strip_pos: Strip Pos
- H_strip_lt1: Strip Lt1
- H_amp_pos: Amp Pos
- H_order_param: Order Param
- H_energy: Energy
- H_p_nn: P Nn
- H_p_le1: P Le1
- H_sg_nn: Sg Nn
- H_sg_le1: Sg Le1
- H_hn_nn: Hn Nn
- H_hn_le1: Hn Le1
- H_mart: Mart
- H_mn_nn: Mn Nn
- H_mn_le1: Mn Le1
- H_mart_diamond: Mart Diamond
- H_rn_nn: Rn Nn
- H_rn_le1: Rn Le1
- H_zfr_width: Zfr Width
- H_delta_pos: Delta Pos
- H_delta_lt_half: Delta Lt Half
- H_sigma_fn: Sigma Fn
- H_gamma_fn: Gamma Fn
- H_sig_ge_half: Sig Ge Half
- H_sig_le_zfr: Sig Le Zfr
- H_diamond_fn: Diamond Fn
- H_sig_lt1: Sig Lt1
- H_phi_fn: Phi Fn
- H_beta_gt_half: Beta Gt Half
- H_beta_lt1: Beta Lt1
- H_qmod_gt1: Qmod Gt1
- H_page_pos: Page Pos
- H_page_bound: Page Bound
- H_rep_pos: Rep Pos
- H_repulsion_effect: Repulsion Effect
- H_other_le1: Other Le1
- H_dh_gap: Dh Gap
- H_phi_q_gt1: Phi Q Gt1
- H_sig_nn: Sig Nn
- H_sig_le1: Sig Le1
- H_s1_nn: S1 Nn
- H_s1_le1: S1 Le1
- H_s2_nn: S2 Nn
- H_s2_le1: S2 Le1
- H_t_nn: T Nn

- `H_t_le1`: T Le1
- `H_sv`: Sv
- `H_sv_nn`: Sv Nn
- `H_sv_le1`: Sv Le1
- `H_sv_diamond`: Sv Diamond
- `H_fd_nn`: Fd Nn
- `H_fd_le1`: Fd Le1
- `H_er_nn`: Er Nn
- `H_er_le1`: Er Le1
- `H_un_nn`: Un Nn
- `H_un_le1`: Un Le1
- `H_sb_nn`: Sb Nn
- `H_sb_le1`: Sb Le1
- `H_lp_block`: Lp Block
- `H_lb_nn`: Lb Nn
- `H_lb_le1`: Lb Le1
- `H_lp_diamond`: Lp Diamond

Established Facts

- `F_char_diamond`: Char Diamond
- `F_planch_diamond`: Planch Diamond
- `F_branch_diamond`: Branch Diamond
- `F_spacing_def`: Spacing Def
- `F_density_def`: Density Def
- `F_norm_spacing_def`: Norm Spacing Def
- `F_poisson_delta3`: Poisson Delta3
- `F_norm_sq_def`: Norm Sq Def
- `F_pair_max_ge_k`: Pair Max Ge K
- `F_pair_max_ge_ck`: Pair Max Ge Ck
- `F_pair_max_eq_when_equal`: Pair Max Eq When Equal
- `F_betti_diamond`: Betti Diamond
- `F_spec_diamond`: Spec Diamond
- `F_weil_diamond`: Weil Diamond
- `F_persist_diamond`: Persist Diamond
- `F_morse_diamond`: Morse Diamond
- `F_error_exp_identity`: Error Exp Identity
- `F_rho_from_sigma`: Rho From Sigma
- `F_diamond_p`: Diamond P
- `F_exc_deriv`: Exc Deriv
- `F_spec_diamond`: Spec Diamond
- `F_diamond_def`: Diamond Def
- `F_comp_diamond`: Comp Diamond
- `F_local_diamond`: Local Diamond
- `F_ef_diamond`: Ef Diamond
- `F_order_def`: Order Def
- `F_sus_def`: Sus Def
- `F_ext_diamond`: Ext Diamond

- F_char_order_def: Char Order Def
- F_quality_def: Quality Def
- F_slack_diamond: Slack Diamond
- F_error_def: Error Def
- F_diamond_approx_def: Diamond Approx Def
- F_diamond_true_def: Diamond True Def
- F_diamond_error_def: Diamond Error Def
- F_fork_diamond: Fork Diamond
- F_ly_diamond: Ly Diamond
- F_fisher_diamond: Fisher Diamond
- F_rg_diamond: Rg Diamond
- F_chrom_diamond: Chrom Diamond
- F_matroid_diamond: Matroid Diamond
- F_lc_diamond: Lc Diamond
- F_diamond_ec: Diamond Ec
- F_gross_zagier: Gross Zagier
- F_weight_diamond: Weight Diamond
- F_hodge_diamond: Hodge Diamond
- F_sheaf_diamond: Sheaf Diamond
- F_diamond_num: Diamond Num
- F_spacing_def: Spacing Def
- F_norm_def: Norm Def
- F_state_diamond: State Diamond
- F_kt_diamond: Kt Diamond
- F_curv_diamond: Curv Diamond
- F_lapl_diamond: Lapl Diamond
- F_phi_max: Phi Max
- F_lyap_diamond: Lyap Diamond
- F_ruelle_diamond: Ruelle Diamond
- F_purity_from_diamond: Purity From Diamond
- F_order_def: Order Def
- F_rho_eq_sigma_max: Rho Eq Sigma Max
- F_energy_prod: Energy Prod
- F_diamond_def: Diamond Def
- F_lichtenbaum: Lichtenbaum
- F_beilinson: Beilinson
- F_sym_diamond: Sym Diamond
- F_energy_prod: Energy Prod
- F_diamond_def: Diamond Def
- F_phi_def: Phi Def
- F_phi_max: Phi Max
- F_char_diamond: Char Diamond
- F_phi_max_1: Phi Max 1
- F_phi_max_2: Phi Max 2
- F_wt_diamond: Wt Diamond
- F_energy_def: Energy Def
- F_diamond_bk: Diamond Bk
- F_pt_delta: Pt Delta

- F_res_energy: Res Energy
- F_qfactor_def: Qfactor Def
- F_order_def: Order Def
- F_energy_prod: Energy Prod
- F_mart_diamond: Mart Diamond
- F_diamond_def: Diamond Def
- F_phi_def: Phi Def
- F_sv_diamond: Sv Diamond
- F_lp_diamond: Lp Diamond

11. Proof Architecture

All proofs are implemented in the Platonic kernel (elysium/fields/resonance_algebra_rh/).

| File | Role |
|--------------------------------|------|
| representation_theory_proof.py | |
| gue_bridge_proof.py | |
| pde_regularity_proof.py | |
| quantum_chaos_proof.py | |
| selberg_trace_proof.py | |
| topological_diamond_proof.py | |
| latent_bridge_proof.py | |
| padic_diamond_proof.py | |
| trace_formula_proof.py | |
| automorphic_gln_proof.py | |
| selberg_sieve_proof.py | |
| phase_field_proof.py | |
| category_theory_proof.py | |
| zero_free_bounds_proof.py | |
| stochastic_processes_proof.py | |
| grh_extension_proof.py | |
| optimization_proof.py | |
| connes_convergence_proof.py | |
| logic_model_theory_proof.py | |
| statistical_mechanics_proof.py | |
| combinatorics_proof.py | |
| information_geometry_proof.py | |
| bsd_diamond_proof.py | |
| categorical_diamond_proof.py | |
| algebraic_geometry_proof.py | |
| numerical_diamond_proof.py | |
| hp_gue_bridge_proof.py | |
| operator_algebras_proof.py | |
| differential_geometry_proof.py | |
| cryptographic_diamond_proof.py | |
| dynamical_systems_proof.py | |
| quantum_information_proof.py | |

| File | Role |
|----------------------------------|------|
| grand_unification_proof.py | |
| langlands_exceptional_proof.py | |
| ktheory_diamond_proof.py | |
| rankin_selberg_proof.py | |
| rh_failure_modes_proof.py | |
| arithmetic_applications_proof.py | |
| coding_theory_proof.py | |
| siegel_exclusion_proof.py | |
| berry_keating_proof.py | |
| hilbert_polya_proof.py | |
| phase_failure_bridge_proof.py | |
| probability_diamond_proof.py | |
| quantitative_siegel_proof.py | |
| ml_diamond_proof.py | |
| harmonic_analysis_proof.py | |

12. Discussion

References