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Nota di contenuto	""Preface""; ""Separation Conditions for Iterated Function Systems with Overlaps""; ""1. Introduction""; ""2. Preliminaries""; ""3. The finite type condition""; ""4. More on the finite type condition""; ""5. Generalized finite type condition""; ""6. Weak separation condition""; ""References""; "" -point Configurations of Discrete Self-Similar Sets""; ""1. Introduction""; ""2. Lower bounds for -point configurations of compatible fractals""; ""3. Determinant fractal zeta functions""; ""References"" ""Fractal Complex Dimensions, Riemann Hypothesis and Invertibility of the Spectral Operator""""1. Introduction""; ""2. Generalized Fractal Strings and Their Complex Dimensions""; ""2.1. The geometry and spectra of ordinary fractal strings.""; ""2.2. Generalized fractal strings and their explicit formulas.""; ""3. The Spectral Operator $\lambda\{ \}$ and the Infinitesimal Shifts $\alpha\{ \}$ ""; ""3.1. A heuristic definition of $\lambda\{ \}$

}. "", "3.2. The weighted Hilbert space  $a_{\mathbb{R}}\{ \cdot \}$ .", "3.3. The infinitesimal shifts  $a_{\mathbb{R}}\{ \cdot \}$  and their properties.", "3.4. The spectral operator  $\{ \cdot \}$ ."

"4. Inverse and Direct Spectral Problems for Fractal Strings"4.1. The original inverse spectral problem.""; "4.2. Fractal strings and the (modified) Weyla€?Berry conjecture.""; "5. Quasi-Invertibility and Almost Invertibility of the Spectral Operator"; "5.1. The truncated operators  $a_{\mathbb{R}}\{ \cdot \}$  and  $\{ \cdot \}$ .""; "5.2. The spectra of  $a_{\mathbb{R}}\{ \cdot \}^{\wedge( \cdot )}$  and  $\{ \cdot \}$ .""; "5.3. Quasi-invertibility of  $\{ \cdot \}$ , almost invertibility and Riemann zeroes.""; "6. Spectral Reformulations of the Riemann Hypothesis and of Almost RH"

"6.1. Quasi-invertibility of  $\{ \cdot \}$  and spectral reformulation of RH"6.2. Almost invertibility of  $\{ \cdot \}$  and spectral reformulation of a €œAlmost RH"."; "6.3. Invertibility of the spectral operator and phase transitions.""; "7. Concluding Comments"; "7.1. Extension to arithmetic zeta functions.""; "7.2. Operator-valued Euler products.""; "7.3. Global spectral operator.""; "7.4. Towards a quantization of number theory.""; "8. Appendix A:Riemanna€?s Explicit Formula"; "9. Appendix B:The Momentum Operator and Normality of  $a_{\mathbb{R}}\{ \cdot \}$ "; "References"

"Analysis and Geometry of the Measurable Riemannian Structure on the SierpiA?ski Gasket"1. Introduction"; "2. SierpiA?ski gasket and its standard Dirichlet form"; "3. Measurable Riemannian structure on the SierpiA?ski gasket"; "4. Geometry under the measurable Riemannian structure"; "5. Short time asymptotics of the heat kernels"; "5.1. Intricsic metrics and off-diagonal Gaussian behavior"; "5.2. One-dimensional asymptotics at vertices"; "5.3. On-diagonal asymptotics at almost every point"; "6. Ahlfors regularity and singularity of Hausdorff measure"

"7. Weyla€?s Laplacian eigenvalue asymptotics"

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