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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 $\zeta_{\mathcal{S}}$ and the Infinitesimal Shifts $\alpha_{\mathcal{S}}$ ""; ""3.1. A heuristic definition of $\zeta_{\mathcal{S}}$

}. ""; ""3.2. The weighted Hilbert space  $a_{\alpha}^{\omega}$ . ""; ""3.3. The infinitesimal shifts  $a_{\alpha}^{\omega}$  and their properties. ""; ""3.4. The spectral operator  $S_{\alpha}^{\omega}$ . ""

""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  $a_{\alpha}^{\omega}(\lambda)$  and  $a_{\alpha}^{\omega}(\lambda)$ . ""; ""5.2. The spectra of  $a_{\alpha}^{\omega}(\lambda)$  and  $a_{\alpha}^{\omega}(\lambda)$ . ""; ""5.3. Quasi-invertibility of  $S_{\alpha}^{\omega}$ , almost

invertibility and Riemann zeroes. ""; ""6. Spectral Reformulations of the Riemann Hypothesis and of Almost RH""

""6.1. Quasi-invertibility of  $S_{\alpha}^{\omega}$  and spectral reformulation of RH""

6.2. Almost invertibility of  $S_{\alpha}^{\omega}$  and spectral reformulation of a

$\in \text{Almost RH}$ . ""; ""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: Riemann's Explicit Formula""; ""9.

Appendix B: The Momentum Operator and Normality of  $a_{\alpha}^{\omega}$ . "";

""References""

""Analysis and Geometry of the Measurable Riemannian Structure on the Sierpiński Gasket""1. Introduction""; ""2. Sierpiński gasket and

its standard Dirichlet form""; ""3. Measurable Riemannian structure on

the Sierpiński gasket""; ""4. Geometry under the measurable

Riemannian structure""; ""5. Short time asymptotics of the heat

kernels""; ""5.1. Intrinsic 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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