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From backward integration to number-theoretic diffusors

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As a student of physics at Göttingen I was interested in the statistics of electromagnetic resonances in metallic cavities when Erwin Meyer offered me a scholarship in concert-hall acoustics. So we compromised and my thesis eventually appeared under the double heading "The statistical parameters of the frequency responses of large enclosures. Experiments with electromagnetic waves".-After moving to Bell Laboratories in New Jersey, I continued to explore, with Heiner Kuttruft, frequency responses in concert halls by digital simulation, confirming my earlier theory that, above a critical frequency, these responses are just "noise" in the frequency domain. Later I dabbled in anti-feedback circuits and explored, with Ben Logan, artificial reverberation that spawned a minor industry-now dubbed sound scapes (first realized by John Chowning) and virtual reality. Then came the work (with Gerhard Sessler, Jim West, Bishnu Atal and Carol Bird) on Philharmonic Hall in New York, which lead to a new method of measuring reverberation time ("backward" integration) and new surface structures, based on number theory, for better sound diffusion. (The idea came to me during a talk by André Weil on "Gauss Sums" during the celebration of the 200th anniversary of Gauss' birth.)