

This is a list of the first products and software introduced to the acoustical community

**Legacy contributions:**

All of the novel patented surfaces and trademarks are provided

First commercial 1D and 2D number-theoretic diffusors, launching the sound diffusion industry

First thin profile, high frequency FlutterFree and FlutterFree-T diffuser

First nested, scaled replica, fractal diffuser called the Diffractal

First asymmetric, optimized diffuser with non-number-theoretic wells depths to minimize the flat plate problem

First modulated diffuser array, utilizing a base shape (0) and rotated version (1), modulated using an optimal binary Barker code sequence called a Modffuser

First fractal Modffuser called a Modffractal for extended bandwidth

First nestable, sound absorbing foam system with variable depth air cavities and reduced area of attachment

First Variable Acoustic Modular Performance Shell (VAMPS) providing a selectable acoustical environment for different musical sections

First acoustical seating risers for indoor arenas, providing low frequency Helmholtz absorption called SilentSteps

First combined diffusive and low-frequency absorptive concrete masonry units called DiffuserBlox

First flat and curved hybrid, binary amplitude diffuser (BAD) containing absorptive and reflective areas defined by an optimal 2D binary sequence

First motorized, triangular, periaktoi Triffuser offering reflection, absorption and diffusion

First ternary and quaternary hybrid amplitude phase grating diffuser

First combination light and sound diffuser fixture called Lumaphon

First experimental boundary-plane goniometer to measure the free-field polar uniformity of scattering from a diffuser and quantify it, according to the AES-4id-2001 and ISO 17497-2 standard

First recording studio de facto design standard utilizing a reflection free zone surrounding the listening position and a diffuse field zone, created with diffusers on the rear wall

First image-model Room Sizer and Optimizer software for cuboid rooms

First wave-based Shape Optimization software to optimize curvilinear shapes producing a family of Waveforms

First wave-based stage canopy, concave rear wall modulation and audience cloud optimization software to provide uniform coverage in performance spaces

First combined diffusor with spaced slats offering low frequency absorption called Slatffusor

First tri-rectangular tetrahedron arrays that reflect sound back to the incident direction

**Current contributions:**

First full-spectrum, Non-cuboid Iterative Room Optimizer (NIRO), using wave-based acoustics below the Schroeder frequency and geometrical acoustics above

First wave-based, VIRTual GOniometer (VIRGO) to predict and quantify the diffusion and scattering coefficients for any shape surface

First modal Acoustical Parametric EQualizer (APEQ) surface treatment system

First SOund Field Analysis Recorder (SOFAR) to experimentally measure and quantify the isotropy of incident sound in a reverberation room (in development)

First thin, metamaterial, microperforated veneered wood system offering concealed optimal absorption (Metasorbor) and diffusion (Metaffusor) (in development)