

Virtual Education Lab: The first RPG measurement

Following my first AES presentation in 1983, I met Don and Carolyn Davis who founded an educational audio company called Synergetic Audio Concepts. They invited me to present my research at the LEDE & Studio Design Workshop at the Dallas Sound Labs. Don Eger of Techtron made the first time domain TEF - 10 analyzer ETC measurements of the first quadratic residue diffusor (QRD) and primitive root diffusor (PRD), pictured in Figure 1. Thin aluminum dividers were used to separate the wells. The data are shown in a copy of the original Syn-Aud-Con Newsletter 1984, in Figure 2. The time response data clearly show the temporal distribution of the scattered sound from the diffusors, compared to the sharp specular reflection from a flat board (top) placed in front of the diffusors. At the meeting, I was introduced to a talented group of studio designers who had an enthusiastic response and planned to include diffusors in their future control room designs. Based on the interest in this research, I formed RPG Diffusor Systems, Inc.

In the next post, we will discuss the first RPG installation at the Oak Ridge Boys' Acorn Studios in Henderson, TN.

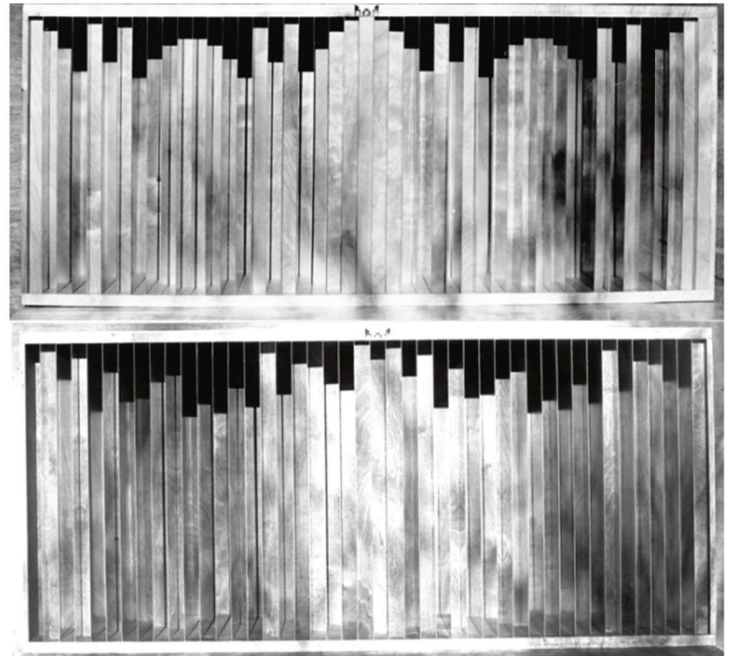
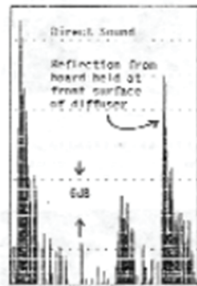
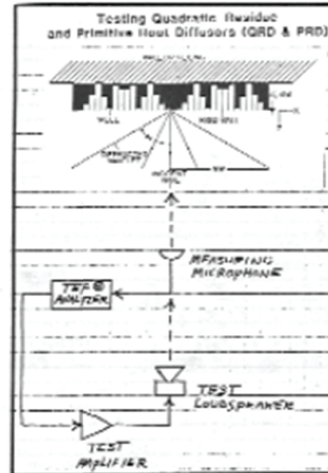
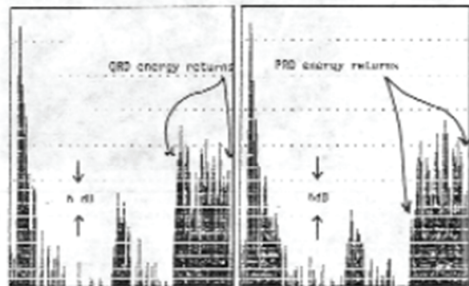


Figure 1. Top: Two periods of the first QRD based on a prime of 23; Bottom: Two periods of the first PRD based on a prime of 23. The well depth sequences are illustrated by the shadows caused by the outdoor diffuse lighting.

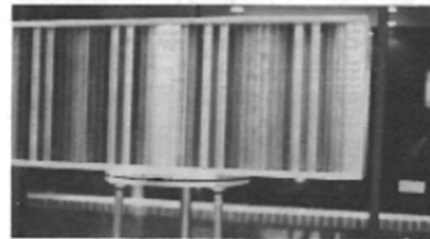
A paper of special interest to us was given at the 76th AES Convention in New York City this past fall entitled "The Schroeder Quadratic-Residue Diffusor: Design Theory and Application." The authors are Peter D'Antonio and John M. Kinnert. We were pleasantly surprised to learn that Dr. D'Antonio knew of our IFDM work and had built some of the Quadratic-Residue Diffusors for use in his own studio.



Russ Berger of Joinder-Polton-Brown Consultants in Dallas was also fascinated with the paper and invited Peter D'Antonio to come to the special UDF class in Dallas and bring along a sample of his work. He did indeed and they were large boxes nearly 6 feet long and weighing 250 lbs. More important, they worked. Many of us felt, after hearing them perform, that we had never heard real diffusion before.



Bob Volkmann (left) and Will Ryan talking with Russ Berger. This is the back view of the D'Antonio diffusors in the master room he is building for the Oak Ridge Space.



ABOVE: A QRD (note two "periods" are visible in the pattern) on our J. W. Davis turntable.

RIGHT: Russ's Peter standing next to one of his diffusors. These extraordinary devices are of a size reasonable to use in control rooms without having compromised the superiority inherent in the concept.



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Figure 2. Left: First time response from a QRD and PRD diffusor, compared to a specular reflection from a flat surface (top); Right: TEF-10 analyzer measurement setup and a few workshop attendees.



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