

Re: Graphical Ray tracing on Hangar Floor

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- *From:* "Grandpa" <j.rayces@xxxxxxx>
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Jim Klein wrote:

Probably with a set of 7 place trig tables and Snell's law and a mechanical desk calculator. It sounds pretty terrible now but as late as the 1950's people used 7 place trig tables and a mechanical calculator like a Marchant or a Frieden. Square roots we performed iteratively with plus, minus, multiply and divide.

In 1947, or before, smart lens designers in England had discarded trig tables, trig functions and trigonometry altogether from ray-tracing. They were using algebraic equations similar to Kingslake's "(Q,U) method" without messing with sines and cosines. Square roots were obtained to 6 places with the help of a 3-place table, that fit in on page, and with a single division. And in 1951, in the US, there was a Friden mechanical calculator that extracted square roots, and oh yes, it made a pretty terrible noise, just like a machine gun. I used one of them, it did not bother me because I was losing my hearing already, but poor Dr. K. Pestrekov who shared the office with me...

Grandpa.

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