

Re: STS51L Accident Questions

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From: Dave Michelson (davem_at_ece.ubc.ca)

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Peter Stickney wrote:

>

- > *If that thing were so good at reflecting _all_ types of*
- > *wave-propagation phenomena, you wouldn't be able to _see_ the bloody*
- > *thing, _would_ you? After all, light & radio are only different*
- > *colors of Electromagnetic Radiation.*

As I said in another post, ultrasonic waves and microwaves have similar wavelengths. Apart from the scalar vs. vector aspect and the materials aspect, they are reflected and refracted in a surprisingly similar manner. Importantly, they are affected by surface roughness and geometry imperfections in a similar way. Light, with a wavelength shorter than either of the above by a few orders of magnitude, behaves very differently.

Almost twenty years ago, my former PhD advisor, an expert in scattering and diffraction by electromagnetic waves, was part of a team that received a sizeable grant to translate his work in EM into a form usable in the acoustics domain. It was easier than many might have expected because it mainly involved taking his solutions to the vector wave equation and recasting them in the form of solutions to the far simpler scalar wave equation.

Another fellow who did his PhD in electromagnetics at UBC almost thirty years ago went on to work as a defence scientist. He made quite a name for himself by taking techniques used to predict scattering and diffraction of EM waves and applying them to underwater sonar. Again, it was the similarity in wavelength that made this work.

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Dave Michelson
davem@ece.ubc.ca