

## Re: Negative index

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**Date:** 07/30/04

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in article ceee3b79.0407301250.45701930@posting.google.com, Hanyou Chu at hchu@thermawave.com wrote on 7/30/04 1:50 PM:

- > *Refractive index can never be negative. It is the dielectric function*
- > *that can become negative. The correct statement is that the dielectric*
- > *function should only be in the upper(or lower depending on your definition)*
- > *complex plane. The refractive index is the square root of the dielectric*
- > *function, and therefore should lie in the first quadrant(only single*
- > *branch).*

Why not? In the complex domain, square roots of numbers with negative real parts are found every day. In some electronic tubes, such as backward wave oscillators, group and phase velocities can have opposite signs. What in optics, would prevent that from happening in a crystal?

Bill