

Classical Optics

We observed that the linear dielectrics and magnetic materials in matter obey a special kind of mathematical property known as Cesàro convergence. Then, we also showed that the analytical continuation of permittivity and permeability to the complex plane in terms of the Riemann zeta (ζ) function. The nontrivial zeros on the half-line of the Riemann zeta (ζ) function correspond to permittivity $\xi_e = 0$ and permeability $\xi_m = 0$. The permittivity $\xi_e = 0$ and permeability $\xi_m = 0$ in the literature are known as zero index materials.

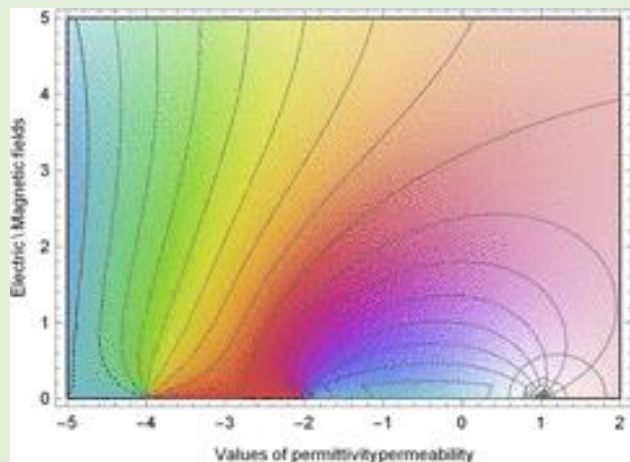


Fig1: In terms of the Riemann zeta function

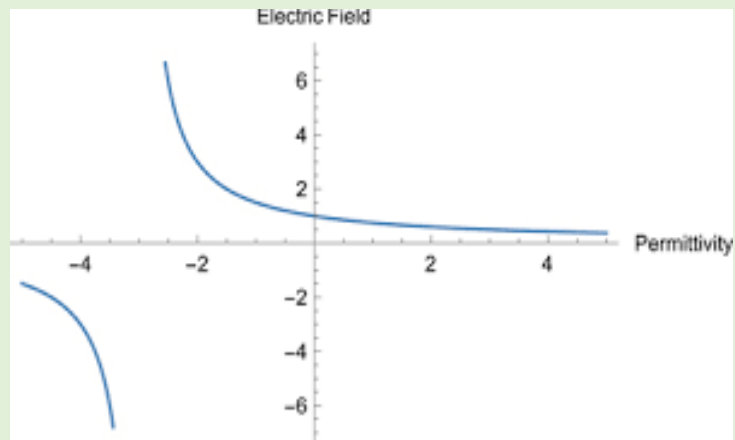


Fig 2: when $E_0=1$

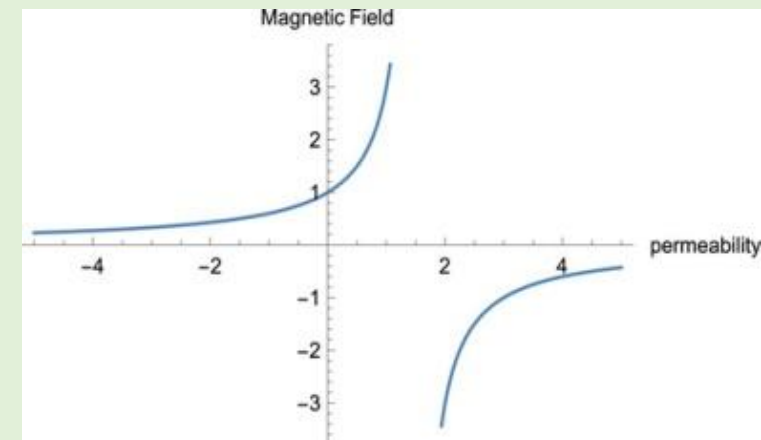


Fig 3: when $B_0=1$

Faculty:

Dr. K V S Shiva Chaitanya

PhD Students:

- YUGANAND NELLAMBAKAM