

Colloquium Notice

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The subtle role of longitudinal waves in light scattering

Longitudinal electric fields exist in the presence of electric charges, either real or induced. They often hide in the near-field of an object, give rise to local-field factors, stock energy, but alone do not induce a Poynting vector.

I will discuss two cases where their role is far from innocent. In a classical transport theory for electromagnetic waves inside media with electric dipoles, longitudinal waves mix with transverse waves and induce a novel transport channel. This imposes a "minimum electromagnetic conductivity" and rules out Anderson localization. In QED, longitudinal electric fields are strongly connected to the vector potential. In the presence of an external magnetic field, the presence of longitudinal fields inside a medium with give rise to a diamagnetic Einstein - De Haas effect induced by the quantum vacuum.

Wednesday

February 15, 2023

Starts at 12:15 PM

Coffee at 12:00 PM

SB B326

This talk is accessible via [Zoom](#) or use
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