

IQSE AMO QO Seminar Series

Wednesday, April 20th, 11:30 am ZOOM &
IQSE seminar room (MPHY 578)

Pizza will be served for IQSE members at 11:00 am. The talk will start around 11:30 am

Matthew J. Berg

Kansas State University, Department of Physics

The Physics of Shadows in Classical Electrodynamics

EVENT DETAILS: Shadows are perhaps the most common and trivial effect in optics. We think of a shadow simply as the blocking of light by an obstacle whether it be via reflection of the light, absorption of light, or a combination of both. Consider, however, that clouds cast shadows despite consisting of transparent water droplets. Moreover, if the light is sufficiently coherent, strong diffraction effects can illuminate portions of what is otherwise expected to be an object's shadow. This talk will examine the formation of shadows from the perspective of fundamental electrodynamics. Shadows will be seen to be a consequence of a subtle interference process, commonly known as the Ewald-Oseen extinction theorem, which applies to any material whether opaque or transparent. The mathematical basis of the theorem will be derived from the Maxwell equations and illustrated in examples. From these considerations, a deeper understanding for the physical process that forms shadows will immerge.

ZOOM information:

<https://tamu.zoom.us/j/98156251523?pwd=QVdSdGxtL1UyY0g1L083SU5QR0RUT09>

Meeting ID: 981 5625 1523

Passcode: 297578

One tap mobile

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