



## SPECTRAL LINES OF EXTREME COMPACT OBJECTS

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We study the absorption of scalar fields by extreme/exotic compact objects (ECOs) -- horizonless alternatives to black holes -- via a simple model in which dissipative mechanisms are encapsulated in a single parameter. Trapped modes, localised between the ECO core and the potential barrier at the photonsphere, generate Breit-Wigner-type spectral lines in the absorption cross section. Absorption is enhanced whenever the wave frequency resonates with a trapped mode, leading to a spectral profile which differs qualitatively from that of a black hole. We introduce a model based on Nariai spacetime, in which properties of the spectral lines are calculated in closed form. We present numerically-calculated absorption cross sections and transmission factors for example scenarios, and show how the Nariai model captures the essential features. We argue that, in principle, ECOs can be distinguished from black holes through their absorption spectra.