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Gravitational Redshift and Deflection of Slow Light JUSTIN DRESSEL, S. RAJEEV, JOHN HOWELL, ANDREW JORDAN, University of Rochester — We explore the nature of the classical propagation of light through media with strong frequency-dependent dispersion in the presence of a gravitational field. In the weak field limit, gravity causes a redshift of the optical frequency, which the slow-light medium converts into a spatially-varying index of refraction. This results in the bending of a light ray in the medium. We further propose experimental techniques to amplify and detect the phenomenon using weak value measurements. Independent heuristic and rigorous derivations of this effect are given.

Justin Dressel
University of Rochester

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