

Abstract Submitted
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Direct observation of resonant modes in circular cavities by LRM¹

JUAN MERLO, FAN YE, MICHAEL J. BURNS, MICHAEL J. NAUGHTON, Department of Physics, Boston College — The observation of plasmonic cavities has become an important topic, as a number of novel technologies are being conceived and developed with such systems.² We present the experimental observation of the resonant plasmon modes in circular cavities by using an alternative scheme of the leakage radiation microscope. The reported method is very simple to implement (wide-field, non-scanning) without sample requirements more than the patterned cavity. The calculation of the cavities' radii for specific excited modes is based on a simple drumhead model.³ Numerical simulations confirm our observations and suggest that the detected field is related to the in-plane components of the modes in the cavity, an expected result when the leakage radiation microscopy is used.

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²M. Khajavikhan, A. Simic, M. Katz, J.H. Lee, B. Slutsky, A. Mizrahi, V. Lomakin, Y. Fainman, Nature, 482, 204 (2012).

³F. Ye, M.J. Burns, and M. J. Naughton, Nano Lett. 13, 519 (2013).

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