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Plasmon drag in esheric percolation series of metallic arrays XUEYUAN WU, JIANTAO KONG, KRZYSZTOF KEMPA, MICHAEL J. BURNS , MICHAEL J. NAUGHTON, Boston College — Perforated thin metallic films, which evolve from hole to island arrays, form an Esheric percolation series. The plasmonic response of such a series has been investigated [1], with critical phenomena observed near the percolation threshold. In this work, we investigate the plasmon drag effect in such structures, and propose a microscopic explanation for the recently discovered plasmoelectric effect [2]. [1] E. M. Akinoglu, T. Sun, J. Gao, M. Giersig, Z.F. Ren, and K. Kempa, "Evidence for critical scaling of plasmonic modes at the percolation threshold in metallic nanostructures", Appl. Phys. Lett. **103**, 171106 (2013). doi: 10.1063/1.4826535 [2] M.T. Sheldon, J. v.Groep, A.M. Brown, A. Polman, H.A. Atwater, "Plasmoelectric potentials in metal nanostructures", Science **346**, 828-831 (2014). doi: 10.1126/science.1258405

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