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Plasmonics near a topological transition: from a hole to particle array YUN PENG, CATHERINE MARCOUX, Boston College, Chestnut Hill, MA, USA, PIOTR PATOKA, MICHAEL GIERSIG, Free University Berlin, Germany, WILLIE PADILLA, KRZYSZTOF KEMPA, Boston College, Chestnut Hill, MA, USA — We investigate the optical response of nanostructures made by self-assembled sphere lithography. In particular, we study the evolution of the transmission spectra during the topological transition from an array of holes in a metallic film, to an array of disconnected, quasi-triangular metallic islands. We show that evolution of the spectra follows simple rules of an effective medium theory. The topological singularity between the two states of the system (continuous to discontinuous film transition) is shown to map specifically into the spectral response.

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