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Enhancement of Light Transmission through Bull's Eye Structures SINAN SELCUK, Department of Physics University of Florida, DANIEL ARENAS, DAVID B. TANNER, ARTHUR F. HEBARD, Department of Physics University of Florida — Optical transmission of a single hole in a metal film surrounded by concentric surface grooves is shown to have an enhanced transmission. We fabricated these structures in silver films which are thin enough to let light through without a center hole. We have measured the optical transmission and reflection in visible to near infrared spectrum observing enhanced transmission scaling with groove periodicity. Opening a hole in the center gives rise to destructive interference between the light passing through the structure and the light passing through the hole. We will discuss the mechanisms behind light transmission for the bullseye structure for varying hole size, groove periodicity, groove depth and the metal thickness.

Arthur Hebard
University of Florida

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