432.

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Title

Influence of intrinsic electronic properties on light transmission through subwavelength holes on gold and MgB(2) thin films

Source

PHYSICAL REVIEW B, vol.84, no.20, NOV 18 2011, 205438.

Abstract

We show how intrinsic material properties modify light transmission through subwavelength hole arrays on thin metallic films in the THz regime. We compare the temperature-dependent transmittance of Au films and MgB(2) films. The experimental data are consistent with analytical calculations and are attributed to the temperature change of the conductivity of both films. The transmission versus conductivity is interpreted within the open resonator model when taking the skin depth into consideration. We also show that the efficiency of this temperature control depends on the ratio of the transmission peak frequency to the superconducting energy gap in MgB(2) films.