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# **Electromagnetic Transmission Spectra in Periodic Hole Arrays**

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Several recent experimental studies have investigated the transmission resonances which occur at certain frequencies when a thin perforated conducting plate is illuminated by an electromagnetic wave. There is hope that this phenomenon will prove useful in constructing filters and other devices for manipulating radiation in the terahertz range. We will describe an analytical and a numerical approach for studying this problem. Numerical results will be presented, along with some clues as to how the transmission spectrum depends on the pattern and shape of the holes, and a framework for design optimization.