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Matching effect in a superconducting MoGe antidot array[1] ZHILI XIAO, JIONG HUA, QIONG LUO, SEVDA AVCI, Northern Illinois University and Argonne National Laboratory, ULRICH WELP, Argonne National Laboratory, WAI-KWONG KWOK, Northern Illinois University and Argonne National Laboratory — MoGe antidot arrays - films containing periodic arrays of nanoscale holes with ∼100 nm spacing have been fabricated using anodized aluminum oxide as substrates. Pronounced matching effect (magnetoresistance oscillations) was observed at temperatures near the zero-field critical temperature. By comparing the magnetic field dependences of the resistance and critical temperature in various magnetic field directions, we find that the matching effect in our MoGe antidot arrays originates from hole-induced suppression of the critical temperature.

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