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**STS studies of the pi-band superconductivity in $MgB_2$ in a transverse field**[1] C. GRIGGS, M.R. ESKILDSEN, University of Notre Dame, N.D. ZHIGADLO, J. KARPINSKI, ETH — Since being discovered $MgB_2$ has become the paradigm for two-band/two-gap superconductivity. Early scanning tunneling spectroscopy (STS) measurements, showed a rapid suppression of the superconductivty in the isotropic $\pi$-band for modest applied fields $H \parallel c$. These measurements were performed with the tunnel current ($I_t$) parallel to the crystalline $c$-axis which couple, almost exclusively, to the $\pi$-band, and with the suppression attributed to vortex core overlap. Here we report STS measurements performed in a transverse field, such that $I_t \parallel c \perp H$. In this configuration no vortices are cutting through the image plane, and instead the superconducting phase is affected by the Meissner currents running within one penetration depth of the sample surface. Within this field orientation we observe far less suppression of the superconducting state in the $\pi$-band compared to the earlier measurements with $H \parallel c$. A clear gap is seen up to $H = 0.9$ T.

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