Microwave properties of epitaxial MgB2 films and micro-bridges
M.V. COSTACHE, G.X. MIAO, J.S. MOODERA, Massachusetts Institute of Technology — The high transition temperature and simple AlB2 structure make the MgB2 superconductor a promising new material for application in superconducting electronic devices. In order to reach this goal, in addition to the development of MgB2 Josephson Junctions (JJ), we have explored the superconducting properties of lithographically patterned micron sized bridges in high quality epitaxial MgB2 films. These thin film micron size wire bridges show JJ characteristics. The current-voltage (I-V) characteristics show the expected JJ behavior as a function of temperature, magnetic field and microwave radiation including hysteresis. Large change in the hysteresis behavior is observed when the microwave power is varied. The large hysteretic I-V can have potential as a memory element. The details will be discussed.

1This work is supported by ONR research funds.

G.X. Miao
Massachusetts Institute of Technology