

Abstract Submitted  
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**Recirculating Planar Magnetron Modeling and Experiments<sup>1</sup>**

RONALD GILGENBACH, MATTHEW FRANZI, DAVID FRENCH, University of Michigan, BRAD HOFF, AFRL, Kirtland AFB, NM, Y.Y. LAU, University of Michigan — We present simulations and initial experimental plans of a new class of crossed field device: Recirculating Planar Magnetrons (RPM).<sup>2</sup> Two geometries of RPM are being explored: 1) Two planar-magnetrons connected by a recirculating section with axial magnetic field and transverse electric field, and 2) Planar cathode and anode-cavity rings with radial magnetic field and axial electric field. These RPMs can be configured in either the conventional or inverted (faster startup) configurations and have numerous advantages for high power microwave generation by virtue of larger area cathodes and anodes. Two and three-dimensional EM PIC simulations show rapid electron spoke formation and microwave oscillation in pi-mode. RPM experiments are planned for the MELBA accelerator at parameters of -300 kV, 1-10 kA and pulselengths of 0.5-1 microsecond.

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<sup>2</sup>Patent pending

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