

Abstract Submitted  
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**An experiment to investigate parametric interaction and mixing of microwaves in plasma**<sup>1</sup> KEVIN RONALD, KIERAN WILSON, COLIN WHYTE, University of Strathclyde, MARK KOEPKE, West Virginia University, ALAN PHELPS, University of Strathclyde, ALAN CAIRNS, University of St Andrews, ROBERT BINGHAM, Rutherford Appleton Laboratory, BENGT ELIAS-SON, ADRIAN CROSS, CRAIG ROBERTSON, PHILIP MACINNES, DAVID SPEIRS, University of Strathclyde, RUTH BAMFORD, Rutherford Appleton Laboratory — Building on earlier research, investigating the mechanism for Auroral Kilometric Radiation [1,2], a linear plasma experiment is being developed to investigate the coupling of multiple microwave beams in magnetised plasma. The magnetic flux density is expected to reach 0.09T. The plasma will be generated by a helicon system using a 'flat spiral' type of antenna. This will produce a large (0.5m diameter, 2-3m long), dense, cool plasma, potentially with a high ionisation fraction. Microwave beams from fixed frequency magnetrons and wideband TWT amplifiers will be used in multi-signal interaction experiments. The paper will present progress on this system. [1] Ronald K., Speirs D.C., McConville S.L., Phelps A.D.R., Robertson C.W., Whyte C.G., He W., Gillespie K.M., Cross A.W., Bingham R., 2008, Phys. Plasmas, 15, art.056503 [2] Speirs D.C., Bingham R., Cairns R.A., Vorgul I., Kellett B.J., Phelps A.D.R., Ronald K., 2014, Phys. Rev. Lett., 113, art 155002

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