

Abstract Submitted  
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**On anomalous Doppler instability in auroral and laboratory plasmas** IRENA VORGUL, School of Mathematics and Statistics, University of St Andrews, UK, ALAN CAIRNS, BARRY KELLETT, STFC Rutherford Appleton Laboratory, Chilton, Didcot, UK, ROBERT BINGHAM, KEVIN RONALD, SUPA, Department of Physics, University of Strathclyde, Glasgow, UK, DAVID SPEIRS, SANDRA MCCONVILLE, KAREN GILLESPIE, ADRIAN CROSS, ALAN PHELPS — This paper examines different conditions of appearance of anomalous Doppler instability when an electron beam moves under the presence of a strong magnetic field. The situations considered here are relevant to wave-particle interactions in space plasmas like lower-hybrid waves generated by Cherenkov and anomalous Doppler resonances [1] as well as to the experiment set at the University of Strathclyde, UK, to examine magnetized electron beams instabilities [2]. We consider growth rates produced by the relevant distribution functions with the beam drift velocity exceeding the wave velocity. Possible experiment configurations are addressed including a dielectric filled waveguide as well as a wave-slowing dielectric with a vacuum core at the axis for the electron beam. Possibilities to distinguish the anomalous Doppler resonance from other accompanying beam instabilities [3] are discussed.

- [1] R. Bingham et al, J. Plasma Physics, 76, pp. 539-546 (2010)
- [2] D. C. Speirs et al, Phys. Plasmas, 17, 056501 (2010)
- [3] I. Vorgul et al, Phys. Plasmas, 18, 056501 (2011).

Irena Vorgul  
School of Mathematics and Statistics, University of St Andrews, UK

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