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Extracting growth rates from a Particle-In-Cell simulation

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Abstract content
 (Max 300 words)

Using a Particle-In-Cell simulation, the characteristics of electrostatic waves are investigated in a plasma containing 3 electron components (hot, cold and beam electrons) and a cold ion population. Three electrostatic modes are excited, namely electron plasma, electron acoustic and beam driven waves. These modes have a broad frequency spectrum and have been associated with intense broadband electrostatic noise observed in the Earth's auroral zone. The growth rates of the beam mode is studied by constructing a growth rate curve from the electric field data. The beam mode is found to have a high growth rate for an intermediate range of wave numbers while it is damped elsewhere.

Apply to be
 consider for a student
 award (Yes / No)?

Yes

Level for award
(Hons, MSc,
 PhD)?

PhD

Main supervisor (name and email)
and his / her institution

Andrew Collier, collierab@gmail.com, South Africa National Space Agency

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

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