Firehose instability at oblique propagation

Petr Hellinger [1], Hiroshi Matsumoto [2]

[1] RASC, Kyoto Univ, [2] RASC, Kyoto Univ.

We study the properties of the
instabilities of an anisotropic proton distribution function in the case of
low-beta plasmas.
We investigate the linear
dispersive properties of the plasma.
We find the well known resonant,
right-handed mode with a nonzero frequency, with a maximum growth rate
at parallel propagation,
but also a nonresonant, linearly polarized
mode with zero frequency, with a maximum growth rate at fairly oblique angles with respect to the ambient magneticfield.
We compare the linear properties of both
the modes, including the growth rates, and
study their nonlinear evolution using a hybrid code.

We study the properties of the
instabilities of an anisotropic proton distribution function in the case of
low-beta plasmas.
We investigate the linear
dispersive properties of the plasma.
We find the well known resonant,
right-handed mode with a nonzero frequency, with a maximum growth rate
at parallel propagation,
but also a nonresonant, linearly polarized
mode with zero frequency, with a maximum growth rate at fairly oblique angles with respect to the ambient magneticfield.
We compare the linear properties of both
the modes, including the growth rates, and
study their nonlinear evolution using a hybrid code.