

# Finite amplitude, obliquely propagating Alfvén waves in a relativistic pair plasma

# Masahiro Ikeda[1]; Tohru Hada[2]; Shuichi Matsukiyo[3]; Victor Muñoz[4]

[1] ESST, Kyushu Univ; [2] ESST, Kyushu Univ; [3] ESST, Kyushu Univ.; [4] ESST, Kyushu Univ.

We have reported earlier that the dispersion relation of a finite amplitude, parallel propagating, circularly polarized Alfvén waves in a relativistic pair plasma can be derived exactly (without assuming weak relativistic effects), and that the obtained dispersion relation exhibits several characteristic features including an appearance of a critical wave number above which the Alfvén wave ceases to exist. We have extended our analysis to the case of oblique wave propagation relative to the background magnetic field, by assuming traveling wave forms and by numerically solving the set of ordinary differential equations using the shooting method. Details of the wave forms as well as their implications to astro-plasma physics will be discussed.