**Meeting:** 1001, Evanston, Illinois, SS 14A, Special Session on Nonlinear Waves

1001-35-59 **Thierry Colin*** (colin@math.u-bordeaux1.fr), MAB, Universite Bordeaux 1, 351 cours de la Liberation, 33405 Talence, France, **Radouin Belaouard** (belaouar@math.u-bordeaux1.fr), CEA CESTA, SIS, 33114 Le Barp, France, **Gerard Gallice** (gallice@cea.fr), SIS, CEA CESTA, 33114 Le Barp, France, and **Cedric Galusinski** (galusins@math.u-bordeaux1.fr), MAB, Universite Bordeaux 1, 351 cours de la liberation, 33405 Talence, France. *A model for Landau damping in plasma physics.*

The Zakharov system describes a coupling between the variation of the density of ions $n$ with the slowly varying enveloppe $E$ of the electric field. In order to describe the kinetics effects for the ions, we couple $(E, n)$ and $F_e(t, v)$ (=the spatial mean value of the distribution function of the electrons). The velocity of the electrons is related to their phase and after rescalling, one has $v = k^{-1}$ where $k$ is the dual Fourier variable of $x$. This coupling can be written

$$
\begin{aligned}
& i(\partial_t E + \nu_e \star E) + \partial_x^2 E = nE \\
& \tfrac{1}{c^2}\partial_t^2 n - \partial_x^2 n = \partial_x^2(|E|^2), \\
& \partial_t F_e - \partial_v(\frac{1}{|v|}|\mathcal{E}(\frac{1}{v}, t)|^2 \partial_v F_e) + F_e - F_{e0} = 0, \\
& \hat{\nu}_e(k, .) = -\frac{1}{k|k|}\partial_v F_e(\frac{1}{k}, .).
\end{aligned}
$$

where $F_{e0}(.)$ is a Gaussian, $|\mathcal{F}E(k, t)|$ is the Fourier transform of $x \to E(x, t)$.
In this talk, we will present various results for the Schrödinger version of this system (that is when $n = |E|^2$). We will introduce a numerical scheme for the complete problem and present some numerical computations. (Received July 30, 2004)