

**Antonio Victor da Silva Junior (São Paulo, Brazil).**

*Approximate solutions of vector fields and an application to Denjoy-Carleman regularity of solutions of a nonlinear PDE*

In this paper we study microlocal regularity of a  $\mathcal{C}^2$  solution  $u$  of the equation

$$u_t = f(x, t, u, u_x),$$

where  $f(x, t, \zeta_0, \zeta)$  is ultradifferentiable in the variables  $(x, t) \in \mathbb{R}^N \times \mathbb{R}$  and holomorphic in the variables  $(\zeta_0, \zeta) \in \mathbb{C} \times \mathbb{C}^N$ . We proved that if  $\mathcal{C}^{\mathcal{M}}$  is a regular Denjoy-Carleman class (including the quasianalytic case) then:

$$\text{WF}_{\mathcal{M}}(u) \subset \text{Char}(L^u),$$

where  $\text{WF}_{\mathcal{M}}(u)$  is the Denjoy-Carleman wave-front set of  $u$  and  $\text{Char}(L^u)$  is the characteristic set of the linearized operator  $L^u$ :

$$L^u = \frac{\partial}{\partial t} - \sum_{j=1}^N \frac{\partial f}{\partial \zeta_j}(x, t, u, u_x) \frac{\partial}{\partial x_j}.$$

This is a joint work with N. Braun Rodrigues.