Unique continuation principles for the generalized-Benjamin-Ono-Zakharov-Kuznetsov equation

Alysson Cunha *

Abstract

We study some unique continuation principles, for the generalized-Benjamin-Ono-Zakharov-Kuznetsov (gBO-ZK) equation

$$\begin{cases} u_t + D^{a+1}\partial_x u + u_{xyy} + uu_x = 0, \ \ (x,y) \in \mathbb{R}^2, \ t \in [0,T], \ a \in (0,1), \\ u(x,y,0) = \phi(x,y), \end{cases} \tag{0.1}$$

where $D^s f = c_s(|\xi|^s \hat{f})^\vee$.

These results were obtained in weighted anisotropic Sobolev class

$$H^{s_1,s_2}(\mathbb{R}^2) \cap L^2((x^{2r_1} + y^{2r_2})dxdy),$$

where $s_1, s_2 \geq \max\{2r_1 + 1, 2r_2 + 1\}$.

References

[1] cunha, a. and pastor, a. - *The IVP for the Benjamin-Ono-Zakharov-Kuznetsov equation in weighted Sobolev spaces*, J. Math. Anal. Appl., 417, 660–693, 2014.

[2] cunha, a. and pastor, a. - *The IVP for the Benjamin-Ono-Zakharov-Kuznetsov equation in low regularity Sobolev spaces*, J. Differential Equations (Print), 261, 2041–2067, 2016.

[3] fonseca, g., linares, f. and ponce, g. - *The IVP for the Dispersion Generalized Benjamin-Ono equation in weighted Sobolev spaces*, Annales de l'Institut Henri Poincare (C) Non Linear Analysis, 30, 763–790, 2013.

[4] ribaud, f. and vento, s. - *Local and Global results for the Benjamin-Ono-Zakharov-Kuznetsov equation*, Discrete Contin. Dyn. Syst. 37, no. 1, 449–483, 2017.

*Joint work with Ademir Pastor-UNICAMP