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Isnaldo Isaac Barbosa* (isnaldo.isaac@gmail.com), Rua José Marques Ribeiro, N 33.,
Trapiche da Barra, Maceió, ALAGOAS 57010730, Brazil. *Sharp Ill-Posedness Results for the
Schrödinger-Debye and Benney System.*

We establish ill-posedness results for the Initial Value Problem (IVP) associated to the Schrödinger-Debye system in the one-dimensional case. This model appears in Nonlinear Optics and in [1] the authors obtained well-posedness results for this one in Sobolev's space $H^s \times H^k$, with s and k satisfying

$$\|k\| - 1/2 \leq s < \min\{k + 1, 2k + 1/2\} \quad \text{and} \quad k > -1/4.$$

Here we prove that the flow associated to the system is not C^2 at the origin for certain relations of the indices s and k . Particularly, we show that some of the local well-posedness results obtained in [1] are sharp. Similar results were obtained for the IVP associated to the Benney system, showing that the local theory developed in [2] is sharp.

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References

- [1] A. J. CORCHO AND C. MATHEUS. *Sharp bilinear estimates and well posedness for the 1-D Schrödinger-Debye system.* Differential and Integral Equations, **22** (3-4), 357-391 (2009).
- [2] J. GINIBRE, Y. TSUTSUMI AND G. VELO. *On the Cauchy Problem for the Zakharov system.* J. Funct. Anal., **151**, 384-436 (1997).

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