PDE, Complex Analysis and Differential Geometry

UNIVERSITY OF NOTRE DAME
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**Title:** Continuity properties of the data-to-solution map for the b-family equation

**Abstract:**
For Sobolev exponents greater than 3/2, it is proved that the data-to-solution map for the $b$-family equation is continuous from $H^s(\mathbb{T})$ into $C([0,T];H^s(\mathbb{T}))$ but not uniformly continuous. The proof of non-uniform dependence on initial data is based on approximate solutions and delicate commutator and multiplier estimates. The novelty of the proof lies in the fact that it makes no use of conserved quantities. Furthermore, it is shown that the solution map is Hölder continuous with a weakened topology.