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Susan Friedlander (susanfri@usc.edu), University of Southern California, Los Angeles, CA 90089, **Natasa Pavlovic** (natasa@math.utexas.edu), The University of Texas at Austin, Austin, 78712, and **Vlad Vicol*** (vicol@usc.edu), University of Southern California, Los Angeles, CA 90089. *Nonlinear instability for the critically dissipative surface quasi-geostrophic equation.*

We address the stability of steady state solutions to the critically dissipative surface quasi-geostrophic equation. We prove that if the unstable spectrum of the linearized operator is not empty, then the steady state is nonlinearly unstable in the energy norm. A key ingredient is the well-posedness of the forced nonlinear problem, which is proven using the nonlinear maximum principle of Kiselev et.al. (Received August 24, 2009)