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Adam Larios, Evelyn Lunasin* (lunasin@usna.edu) and **Edriss S. Titi.** *Global well-posedness for the 2D Boussinesq system with anisotropic viscosity and without heat diffusion.*

Our result improves the previous work of Danchin and Paicu 2008 [Global existence results for the anisotropic Boussinesq system in dimension two, *Math. Models Methods Appl. Sci.* 21 (2011), no. 3, 421—457.] We require a weaker initial data to establish uniqueness and doing so using only elementary tools from Sobolev spaces, avoiding the use of para-calculus and para-product formula from harmonic analysis. To achieve this, we use a new approach of defining an auxiliary “stream function” associated with the density, analogous to the stream-function associated with the vorticity in the 2D incompressible Euler equations and then proceed using the techniques of Yudovich (1963) for proving uniqueness for the 2D incompressible Euler equations. (Received September 23, 2018)