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Hisashi Okamoto* (okamoto@kurims.kyoto-u.ac.jp), Kyoto, 606-8502, Japan. *Blow-up problems in the strained vorticity dynamics and critical exponents.* Preliminary report.

Two partial differential equations are studied from the view-point of critical exponents. They are equations for a scalar unknown of a single spatial variable, and produce self-similar solutions of the Navier-Stokes equation. The global existence and blow-up are examined for them, and the critical exponent separating them is determined. (Received March 03, 2011)