Uniqueness of the Solutions to the Dissipative 2D Quasi-Geostrophic Equation

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Uniqueness of solutions to dissipative two dimensional (2D) quasi-geostrophic (QG) equation is studied. A new sufficient condition of the type of Beirao da Veiga for 3D Navier-Stokes is obtained. It is the first available sufficient condition on uniqueness which is valid for any dissipative case. A previous condition of Leray-Prodi-Serrin type of Constantin and Wu is only valid for sub-critical case. The new condition proves uniqueness of most of strong solutions obtained in literature for critical and super-critical cases. These uniqueness results were not available previously.