

Local regularity conditions on initial data for weak solutions to the incompressible Navier-Stokes equations

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We consider the regularity of weak solutions to the three dimensional incompressible Navier-Stokes equations. We prove that the suitable weak solution is locally regular if a local scaled energy of the initial data is sufficiently small. As an application, it is shown that if a global weighted L^2 norm of the initial data is finite, then the weak solution is regular in a region confined by space-time hypersurfaces determined by the weight. Our result is also applied to studying energy concentration near a possible blow-up time. This talk is based on a joint work with Kyungkeun Kang (Yonsei Univ.) and Tai-Peng Tsai (Univ. British Columbia).