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**Session Bc - Turbulence Theory.**

*session, Sunday morning, November 19*

*Salon C, Hyatt Regency Hotel*

## **[Bc.03] Sufficient Condition for a Finite-Time Singularity in a High-Symmetry Euler Flow<sup>†</sup>**

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A sufficient condition is obtained for the development of a finite-time singularity in a highly symmetric Euler flow, first proposed by Kida [J. Phys. Soc. Jpn. 54 2132 (1985)], and recently simulated by Boratav and Pelz [Phys. Fluids 6 2757 (1994)]. The symmetry of the flow preserves the origin of the system to be a 3D velocity null point as well as the point of intersection of three vorticity null lines (the  $x,y,z$  axes). The sufficient condition for singularity simply requires that the fourth-order spatial derivative of the pressure ( $p_{xxxx}$ ) at the origin be positive for all times leading up to the singularity. Evidence for a finite-time singularity near the origin is presented by Boratav and Pelz who have confirmed recently that the sufficient condition is indeed satisfied in their simulation. <sup>†</sup>Work Supported by NSF Grant No ATM 93-10157 and AFOSR Grant No. F49620-93-1-0071.

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