

Abstract Submitted  
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**Vortex statistics in turbulent channel flows**<sup>1</sup> JOS HUGO ELSAS<sup>2</sup>,  
LUCA ROBERTO AUGUSTO MORICONI, Univ Fed Rio de Janeiro — In order  
to address the role of coherent structures in wall bounded turbulence, we study the  
statistics of morphological and kinematic properties of vortices, such as circulation,  
radius and height distributions. To accomplish that, we introduce a novel vortex  
identification method named as "vorticity curvature criterion" which is based on  
the local properties of the vorticity field. We furthermore employ a background sub-  
traction procedure to remove shearing background effects expected to be present in  
the topology of the streamwise/wall-normal plane flow configurations. We discuss,  
through a comparative study of performance with the usual swirling strength crite-  
rion, and extending the previous analyses to the detection of coherent structures in  
the spanwise/wall normal planes, isotropization issues for the paradigmatic case of  
numerical turbulent channel flows.

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