

Abstract Submitted  
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**Merging and auto-generation of vortices in wall bounded flow** GERRIT ELSINGA, MANU GOUDAR VISHWANATHAPPA, WIM-PAUL BREUGEM, Delft University of Technology — For channel flow, we explore how a hairpin eddy may reach a threshold strength required to produce additional hairpins by means of auto-generation. This is done by studying the evolution of two eddies with different initial strengths (but both below the threshold strength), initial sizes and initial stream-wise spacing between them. The numerical procedure followed is similar to Zhou et al [1]. The two eddies were found to merge into a single stronger eddy in case of a larger upstream and a smaller downstream eddy placed within a certain initial stream-wise separation distance. Subsequently, the resulting stronger eddy was observed to auto-generate new eddies. Merging of eddies thus is a viable explanation for the creation of the threshold strength eddies.

[1] J. Zhou, R.J. Adrian, S. Balachandar, and T.M. Kendall, *Journal of Fluid Mechanics*, 387:353-396, 1999.

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