

Abstract Submitted
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The turbulent cascade of individual eddies¹ CECILIA HUERTAS-CERDEIRA, ADRIÁN LOZANO-DURÁN, JAVIER JIMÉNEZ, U. Politécnica Madrid — The merging and splitting processes of Reynolds-stress carrying structures in the inertial range of scales are studied through their time-resolved evolution in channels at $Re_\lambda = 100 - 200$. Mergers and splits coexist during the whole life of the structures, and are responsible for a substantial part of their growth and decay. Each interaction involves two or more eddies and results in little overall volume loss or gain. Most of them involve a small eddy that merges with, or splits from, a significantly larger one. Accordingly, if merge and split indexes are respectively defined as the maximum number of times that a structure has merged from its birth or will split until its death, the mean eddy volume grows linearly with both indexes, suggesting an accretion process rather than a hierarchical fragmentation. However, a non-negligible number of interactions involve eddies of similar scale, with a second probability peak of the volume of the smaller parent or child at 0.3 times that of the resulting or preceding structure.

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