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A new Hybrid Filtered Favre average for compressible LES MASSIMO GERMANO, Duke University, ANTONELLA ABBÀ, Politecnico di Milano — The statistical study of compressible or variable density turbulent flows is usually performed in terms of the Favre average weighted with the *statistical* density. The usual extension of this approach to the Large Eddy Simulation of compressible turbulent flows is in terms of the Filtered Favre average weighted with the *filtered* density. By consequence the Favre averages are not directly recovered by the statistical average of the Filtered Favre quantities. All that is inconvenient as regards the comparison between RANS and LES and as regards the development of some modeling approaches such as the dynamic modeling procedure and the hybrid RANS/LES strategies. In order to simplify the formulation of compressible LES and to relate more directly the filtered quantities to the statistical ones a new Hybrid Filtered Favre average weighted directly with the *statistical* density is proposed and compared with the usual one.

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