

# Hybrid RANS/LES: Blending models and blending filters

**M. Germano**

Dip. di Ing. Aeronautica e Spaziale  
Politecnico di Torino, Italy  
massimo.germano@polito.it

## Abstract

As recently remarked by Sagaut and Deck (2009) hybrid RANS/LES techniques are the main strategy to reduce computational cost compared to LES when attached boundary layers have a significant impact on the global flow. Different techniques are applied. One of the most studied and largely applied consists in a weighted sum of LES and RANS *models*, and can be classified as a zonal approach with a smooth transition from one model to another (see Rolfo et al. (2010)). Recently a different blending technique has been proposed by Germano (2004), where the hybrid RANS/LES model is the model associated to the weighted sum of LES and RANS *filters*. One important point is that the resulting model contains a new term that some preliminary investigations have shown important to the hybrid simulation Sanchez-Rocha and Menon (2009); Rajamani and Kim (2010). In the seminar we will illustrate this point, and we will discuss the possible implementation of such new hybrid technique.

## References

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## About the author

Prof. M. Germano is one of the most acknowledged researchers of turbulence modelling in the context of Large Eddy Simulation (LES). His proposal of a *Dynamic Procedure*, in order to evaluate an appropriate *local* value of the Smagorinsky coefficient, and his identity (*Germano's identity*), which is the base of many Sub-Grid Scale models, are very famous. Prof. Germano has also given a fundamental contribution to the theoretical formulation of LES, through his work on the filtering approach to turbulence. In the recent years Prof. Germano has devoted himself to the development of Hybrid RANS/LES methodologies.