1B10: NUMERICAL SIMULATION OF A TURBULENT FLAME USING TABULATED CHEMISTRY BASED ON SELF-SIMILAR PROPERTIES OF TURBULENT PREMIXED FLAMES.
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**Comment by Hemanth Kolla, University of Cambridge, UK**
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Your presentation on using the self-similarity of turbulent premixed flames to simplify the chemistry tabulation was very interesting. I have a few questions: Does your formulation require the turbulent flame speed St to be modelled? Could you comment on the possible influence of flame stretch on the reaction rate? Is this influence accounted for in the FPI approach?

**Reply by Benoît Fiorina**
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The turbulent flame speed is not explicitly modeled in our formulation where the turbulence/flame interactions are described through presumed probability density function (pdf) formalism. The turbulent flame speed, as well as the turbulent flame brush thickness, has been introduced in the theoretical derivation in [1] to evidence the physics behind the self-similarity behaviour of turbulent premixed flames: reaction rates are made non-dimensional using global flame properties such as turbulent flame speed and thickness. In practice, modeled reaction rates are non-dimensional from their maximum values as shown in the paper. The reader will find details in [1].

Flame stretch effects are reproduced when the FPI database takes into account the preferential diffusion. This results have been presented in [2] for hydrogen counterflow laminar flames. Validations in the case of a turbulent hydrogen flames will be submitted to publication soon by Gicquel and Vervisch.

References:

[1] D. Veynante, B. Fiorina, P. Domingo, L. Vervisch, *Combust. Theory and Modelling* (2008) in press.
[2] O. Gicquel, N. Darabiha, D. Thevenin, *Proc. Combust. Inst.* 28 (2000) 1901–1908.