Kinetic theory of simple reacting spheres: modelling and hydrodynamic regimes

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In the frame of the kinetic theory of chemically reacting gases, we consider the model of *simple reacting spheres* (SRS) in a moderately dense gas regime. The gas molecules behave as if they were single mass points and collisions result in chemically reactive encounters when the kinetic energy associated to the colliding particles exceeds the activation energy. In comparison to other reactive kinetic theories, the SRS model presents some advantages that will be explained in this talk.

Moreover, we will present some recent results and discuss some mathematical problems associated to the SRS kinetic system, namely, the consistency of the SRS model, some properties of the linearized SRS system around the equilibrium, and hydrodynamic limits for the SRS systems.