1164-76-182 **Milana Pavic-Colic*** (milana.pavic@dmi.uns.ac.rs), Trg Dositeja Obradovica 4, 21000 Novi Sad, Serbia, and **Irene M. Gamba** (gamba@math.utexas.edu), 201 E. 24th Street, POB 4.102, 1 University Station (C0200), Austin, TX 78712-1229. *Cauchy problem for the Boltzmann equation modeling a polyatomic gas.*

This talk will focus on the full non-linear space homogeneous Boltzmann equation describing a polyatomic gas in the continuous framework, which assumes one additional continuous variable in the kinetic model, the so-called microscopic internal energy. We will present existence and uniqueness result obtained by means of an abstract ODE theory in Banach spaces. The transition probability rate is supposed to satisfy an extended Grad assumption, that comprises hard potentials for both the relative speed and internal energy with the rate in the interval $(0, 2]$, which is multiplied by an integrable angular part and integrable partition functions. This rate can be determined in order to recover a proper value of the Prandtl number and to match experimental measurements for the shear viscosity dependence upon temperature. Moreover, in this talk, we will show that polynomially and exponentially weighted Banach space norms associated to the solution are both generated and propagated uniformly in time. (Received January 18, 2021)