Hypersonic Flow of CO2-N2 Mixture around a Spacecraft during the Atmospheric Reentry

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Abstract : The aim of this work is to analyze a flow around the axisymmetric blunt body taken into account the chemical and vibrational nonequilibrium flow. This work concerns the entry of spacecraft in the atmosphere of the planet Mars. Since the equations involved are non-linear partial derivatives, the volume method is the only way to solve this problem. The choice of the mesh and the CFL is a condition for the convergence to have the stationary solution.