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Self-similar flows in spherical geometry JEAN GERIN-ROZE, CEA — If we are looking at the implosion of a sphere starting with a strong shock, the study of self-similar flows is a classical problem. We will assume that: - The sphere contains a perfect gas with a polytropic coefficient γ=5/3. - The shock follows the equation: r_c=A(-t)$^\alpha$ with t_0 <t<0. There are two known solutions to that problem: - The G.Guderley solution corresponding to $\alpha = \alpha_{ref} = 0.68838$. In this solution, the outer implosion velocity is almost constant and the compression rate at focalization is ρ/ρ_0=9.6. - The Y. Saillard solution corresponding to the same value of α (see SCCM-2005 Proceedings p1515). In this solution, the outer velocity is increasing and the compression rate is tending to infinity. We will exhibit a new family of solutions: there is one solution for each value of α from 0 to α_{ref}. As in the Y. Saillard solution, outer velocity and compressing rate are tending to infinity. These new solutions (with two parameters, initial outer velocity and shock shape coefficient α) can provide us with benchmarks and perhaps also with ICF target design tool.

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