1031-35-109     **O. Costin\*** (`costin@math.ohio-state.edu`), 100 Math Tower, 231 West 18th Avenue, Columbus, OH 43210-1174. *Borel summation techniques in PDEs and the Navier-Stokes equation in $\mathbb{R}^3$.*

We introduce new methods to analyze existence and uniqueness of solutions of relatively general nonlinear systems of evolution PDEs in $\mathbb{R}^n$. We will illustrate the methods to show existence of local solutions to the 3d Navier-Stokes equation and show how the methods can provide computer assisted proofs of global existence for special initial data. (Received August 06, 2007)