## Fluid Mechanical Blow-Up Problems: Model Equations And Numerical Computations

## Hisashi Okamoto

KYOTO UNIVERSITY, JAPAN okamoto@kurims.kyoto-u.ac.jp

It is known that some solutions of certain non-linear partial differential equations exist only for finite time. Phenomena like this is called blowup problem. I will talk on some results on the generalized Proudman-Johnson equation, De Gregorio's equation, non-stationary swirling flow of von Kármán. Through analysis and numerical computation, I will explain the important role of the convection term, which has been neglected in blow-up problems. Namely, blow-up is suppressed by the properly posed convection term.