

## **Free Thin Liquid Films: Efficient Nonlinear Lubrication Model and Panoramic Diagnostic Set-Up**

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### **Abstract**

Reviewed is a previously developed nonlinear thin-film lubrication model aimed at predicting nonlinear stability, distortion and disintegration of thin liquid films such as those found in inertial fusion reactors, industrial coating systems, spray drying and in atomization systems for jet propulsion engines and heavy fuel-oil burners. Usefulness and versatility of the employed approach with respect to the consideration of different physical effects and their significance for the film distortion and rupture process is outlined. Qualitative and quantitative comparison with other analysis approaches is made. Extension into a general nonlinear thin film dynamics/atomization model or FSIC (Filament Source In Cell) model for use in general purpose CFD solvers is described. The concept of conical fluid film interrogation using panoramic/360° photography for the purpose of model validation is outlined.

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