Title: Workshop on Surface Evolver Modeling of Capillary Micro-channels

Collicott S. H.[1],

[1]School of Aeronautics and Astronautics, College of Engineering, Purdue University, West Lafayette, Indiana, USA

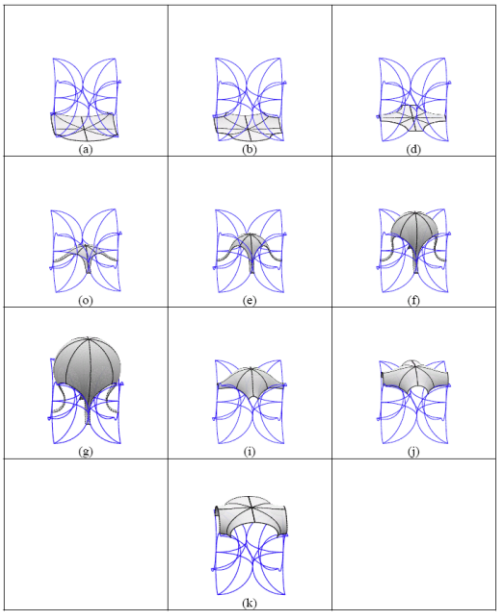
Keywords: Surface Evolver, Capillary Statics, Capillary Modelling

I. Abstract Body

This workshop seeks to help researchers overcome the most common obstacle for new users of Surface Evolver. That is, new users easily download and install the code, run the demos, but then are unable to efficiently move into performing original capillary fluids modelling efforts in their own geometries. Practical advice in the basics of defining geometries, wetted surface energies, mesh management, evolving towards a solution, and assessing convergence are taught. Examples in capillary microchannels are used throughout to provide attendees the examples meaningful to their field of research.

Attendees are encouraged to download and install the free Surface Evolver code from its creator's web site[1] and run the cube and mound demos before the workshop. Lessons and examples from microchannels[2,3], porous media[4], and fundamental fluid phenomena[5] are used.

II. Image: from reference [4]



III. References:

1 http://www.susqu.edu/facstaff/b/brakke/evolver

2 Manning, R. E. and Collicott, S.H., "Existence of static capillary plugs in horizontal rectangular cylinders," *Microfluidics and Nanofluidics*. 19: 1159-1168. 2015. DOI: 10.1007/s10404-015-1632-y

3 Collicott S.H., Lindsley W.G., and Frazer D.G., "Zero-gravity liquid-vapor interfaces in circular cylinders," *Physics of Fluids*. 18, 2006. DOI: 10.1063/1.2345026

4 Slobozhanin L.A., Alexander J.I.D., Collicott S.H., and Gonzalez S.R., "Capillary pressure of a liquid in a layer of close-packed uniform spheres," *Physics of Fluids*. 18. 2006DOI: 10.1063/1.2236123.

5 Collicott S.H. and Weislogel M. M., "Computing Existence and Stability of Capillary Surfaces Using Surface Evolver," *AIAA Journal*. 42: 289-295. 2004.

IV. Biography:

Steven H. Collicott is in his 28th year as a Professor in the School of Aeronautics and Astronautics at Purdue University and is now also the Associate Head for Engagement. His research focuses on capillary fluid physics in spaceflight and on Earth. He consulted on the design of the successful Vane-Gap payloads in the International Space Station, has flown nearly 40 parabolic flight experiments and 10 commercial sub-orbital rocket experiments. He chairs the Sub-Orbital Advisory Group of the Commercial Spaceflight Federation and serves on the Science and Technology Advisory Panel for CASIS.

V. Presenting author details



Full Name: Steven H. Collicott
Contact number: +1-765-494-2339
Twitter account:
Linked In account:
Session name/ number:
Category: Oral presentation
Passport Number: N/A