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Kinetic effects in dynamic wetting[1] JAMES SPRITTLES, University of Warwick — The maximum speed at which a liquid can wet a solid is limited by the need to displace gas lubrication films in front of the moving contact line. The characteristic height of these films is often comparable to the mean free path in the gas so that hydrodynamic models do not adequately describe the flow physics. In this talk, I will develop a model which incorporates kinetic effects in the gas, via the Boltzmann equation, and can predict experimentally-observed increases in the maximum speed of wetting when (a) the liquid's viscosity is varied, (b) the ambient gas pressure is reduced or (c) the meniscus is confined.

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James Sprittles
University of Warwick

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