

Hocking, L. M.

The spreading of drops with intermolecular forces. (English) Zbl 0842.76019

Phys. Fluids 6, No. 10, 3224-3228 (1994).

The author studies the spreading of a thin drop of fluid that partially wets a plane surface. The model includes capillarity, slip, and intermolecular forces. It is shown that a complete solution is possible without having to exclude the vicinity of the contact line and without having to assume the dynamic behaviour of the contact angle. An equation is found for the evolution of the drop radius; when the drop is not close to its equilibrium radius, the spreading law has the expected one-tenth power dependence on the radius, with a coefficient which is determined as a function of the intermolecular forces and the slip coefficient. The calculation is performed for small static contact angles and also for the limit when this angle tends to zero.

Reviewer: J.Prakash (Bombay)

MSC:

[76D08](#) Lubrication theory

[76D45](#) Capillarity (surface tension) for incompressible viscous fluids

Cited in 11 Documents

Keywords:

[evolution of drop radius](#); [slip](#); [contact angle](#)

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