Bricmont, Jean; **Kupiainen, Antti**; **Taskinen, Jari**
Stability of Cahn-Hilliard fronts. (English) Zbl 0939.35022
Commun. Pure Appl. Math. 52, No. 7, 0839-0871 (1999).

The Cahn-Hilliard equation on the real axis

$$\partial_t u = \partial_x^2(-\partial_x^2 u - u/2 + u^3/3)$$

is considered. Stability of the kink solution is proved. The proof is based on an inductive renormalization group method. In addition, the detailed asymptotic of the solution is obtained as time tends to infinity.

Reviewer: Michael I.Gil' (Beer-Sheva)

MSC:

35B35 Stability in context of PDEs
35K25 Higher-order parabolic equations

Keywords:

nonlinear parabolic equations; Cahn-Hilliard equation; kink solution; inductive renormalization group method

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References:

[1] Alikakos, Arch Rational Mech Anal 128 pp 165– (1994)
[2] Bray, Adv in Phys 43 pp 357– (1994)
[3] Bricmont, Comm Pure Appl Math 47 pp 893– (1994)
[4] Caffarelli, Arch Rational Mech Anal 133 pp 129– (1995)
[5] Pego, Proc Roy Soc London Ser A 422 pp 261– (1989)
[6] Pego, Philos Trans Roy Soc London Ser A 340 pp 47– (1992)
[7] Shinozaki, Phys Rev E 47 pp 804– (1993)