

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Nonlinear traveling waves in confined ferrofluids¹ SÉRGIO LIRA,
JOSÉ MIRANDA, Universidade Federal de Pernambuco — We study the development of nonlinear traveling waves on the interface separating two viscous fluids flowing in parallel in a vertical Hele-Shaw cell. One of the fluids is a ferrofluid and a uniform magnetic field is applied in the plane of the cell, making an angle with the initially undisturbed interface. We employ a mode-coupling theory which predicts the possibility of controlling the speed of the waves by purely magnetic means. The influence of the tilted magnetic field on the waves shape profile, and the establishment of stationary traveling wave structures are investigated.

¹We thank CNPq (Brazilian Research Council) for financial support.

Sérgio Lira
Universidade Federal de Pernambuco

Date submitted: 01 Aug 2012

Electronic form version 1.4