

Abstract Submitted
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Magnetically induced solitons in a Hele-Shaw cell¹ SERGIO LIRA,
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the development of propagating solitons 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 derive a Korteweg-de Vries equation for long
waves at this confined geometry which predicts the possibility of controlling the
speed of the solitons by magnetic means. The influence of the tilted magnetic field
on the velocity and on the shape of the solitary waves is investigated.

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