ΠΑΝΕΠΙΣΤΗΜΙΟ ΙΩΑΝΝΙΝΩΝ

ΤΜΗΜΑ ΜΑΘΗΜΑΤΙΚΩΝ

Εβδομαδιαίο Σεμινάριο

The translating soliton equation

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We give an analytic approach to the translating soliton equation $H = \langle N, \vec{a} \rangle$ with a special emphasis in the study of the Dirichlet problem in convex domains of the plane. The translating soliton equation appears in the theory of the mean curvature flow of Huisken and Ilmanen. A translating soliton in Euclidean space is a solution of the mean curvature flow when the surface evolves purely by translations along the direction $\vec{a}$. However, this equation was studied by S. Bernstein in 1910 in the context of the solvability of the Dirichlet problem of elliptic equations. Sixty years later, the second approach to the translating soliton equation is due to J. Serrin in a classical paper on quasilinear elliptic equations. Possibly due to the length of this paper, this equation seemed to be forgotten in the literature until the 80's when the translating soliton equation appears again in the context of the mean curvature flow.

Τετάρτη 27 Μαρτίου 2019, 6:00μμ

Αίθουσα 201α Τμήματος Μαθηματικών

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