On periodic traveling waves of the Camassa-Holm equation

In this talk we are concerned with the wave length $\lambda$ of smooth periodic traveling wave solutions of the Camassa-Holm equation. The set of these solutions can be parameterized using the wave height $a$. Our main result establishes monotonicity properties of the map $\lambda(a)$, i.e. the wave length as a function of the wave height. We obtain the explicit bifurcation values, in terms of the parameters associated with the equation, which distinguish between the two possible qualitative behaviours of $\lambda(a)$, namely monotonicity and unimodality. The key point is to relate $\lambda(a)$ to the period function of a planar differential system with a quadratic-like first integral, and to apply a criterion which bounds the number of critical periods for this type of systems.

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Hauptgebäude der Universität

Über Ihren Besuch würden sich freuen:

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