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The formation of singularities in the critical harmonic-map wave-flow into \mathbb{S}^2

ABSTRACT:

I will discuss recent work in collaboration with Igor Rodnianski concerning finite time breakdown of the wave-map flow from $(2 + 1)$ dimensional Minkowski space into the sphere \mathbb{S}^2 .

In the talk I will discuss some of the history of the problem, as well as our method of proof. In particular I will discuss how the so called “Bogomolnyi structure” of the corresponding harmonic map equation, together with techniques coming from the modulational stability theory of non-integrable solitons, lead to a resolution of the problem for equivariant flows.