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.