Abstract Submitted
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The decay of Hopf solitons in the Skyrme model DAVID FOSTER, University of Bristol — In the 1960s Skyrme proposed a topological model of atomic nuclei, where the solutions are lump-like and have an associated conserved topology. This topology stabilises them. The models energy functional can be understood as an elastic energy functional, and its minima correspond to nuclei. Recently the model has had success at replicating key properties of nuclei. Namely it has replicated the deuteron, diproton and dibaryon [1]. In the talk we will discuss knot-like solutions, which correspond to multiple nuclei anti-nuclei pairs. These solutions are not topologically stabilised, and can hence decay away. We see how different knots decay in different modes, which illuminates the local geometry of the configuration space. We will also discuss how certain knots/links life-time can be increased by a time dependent flow, leading to new nuclear physics predictions [2]. [1] D. Foster and N.S. Manton, Nuclear Physics B, 899 (2015) 513526. [2] D. Foster 'The decay of Hopf solitons in the Skyrme model' arXiv:1610.01571 (2016)

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