



INSTITUTO DE FÍSICA  
DE PARTÍCULAS Y DEL COSMOS

IPARCOS



Preprint Series in Particles and Cosmos Physics

n° IPARCOS-UCM-26-018

# Excited solutions in a Skyrme--Chern-Simons model in $2+1$ dimensions

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April 2026

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## Abstract

We study excited solutions in a Skyrme--Chern-Simons theory in  $2+1$  dimensions. In particular, we emphasize the necessity of using a Lagrange multiplier method to obtain excited solutions, due to the appearance of a discontinuity when using a constraint compliant parametrization. These solutions are characterized by an integer number  $p$ , excited solutions corresponding to  $p \neq 0$ . The dependence of the global charges on the parameters is analyzed, showing non-standard behaviors. We also find that the presence of the Skyrme--Chern-Simons term does not alter significantly the pattern of energy levels, so  $p=0$  solutions (fundamental solutions) have always the minimal energy.

