Contribution ID : **4** Type : **Oral Presentation**

Universality of the chiral soliton lattice in the low energy limit of QCD

Monday, 24 November 2025 10:30 (0:45)

Content

We show that the chiral soliton lattice (ChSL) is, in a precise sense, a universal feature of the low-energy limit of QCD minimally coupled to Maxwell theory. By considering a suitable ansatz adapted to describe topological solitons at finite baryon density in a constant magnetic field, the generalized Skyrme model coupled to the Maxwell theory (including the corrections in the ‘t Hooft large N_c expansion) is reduced to the effective Lagrangian of the ChSL phase, describing a lattice of domain walls made of hadrons. One of the key points in this construction is the fact that even when the usual topological charge density vanishes, the presence of the Callan-Witten term in the topological charge density allows for a non-vanishing baryon number. In the present approach, the magnetic field can be external, as is usually assumed for the chiral soliton lattice, or it can be self-consistently generated by the hadronic layers themselves. Finally, we show how our formulation allows us to study the coupling of the ChSL with quark matter.

Primary author(s) : Dr. VERA, Aldo (Universidad Mayor)

Presenter(s) : Dr. VERA, Aldo (Universidad Mayor)