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Composite topological structures in SO(10)

Wednesday 15 May 2024 16:00 (15 minutes)

We explore a variety of composite topological structures that arise from the spontaneous breaking of SO(10) to SU(3)c × U(1)em via one of its maximal subgroups SU(5) × U(1)χ, SU(4)c × SU(2)L × SU(2)R, and SU(5) × U(1)X (also known as flipped SU(5)). They include i) a network of $\mathbb{Z}$ strings which develop monopoles and turn into necklaces with the structure of $\mathbb{Z}2$ strings, ii) dumbbells connecting two different types of monopoles, or monopoles and antimonpoles, iii) starfish-like configurations, iv) polypole configurations, and v) walls bounded by a necklace. We display these structures both before and after the electroweak breaking. The appearance of these composite structures in the early universe and their astrophysical implications including gravitational wave emission would depend on the symmetry breaking patterns and scales, and the nature of the associated phase transitions.

Mini Symposia (Invited Talks Only)

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