

Alignment and Co-Scaling of Electric and Magnetic Towers

Tuesday 8 July 2025 15:30 (17 minutes)

In regions of the landscape with a tower of light electrically charged particles or branes – those with charge-to-mass (or tension) ratio parametrically larger than 1 in Planck units – one also finds a tower of light magnetically charged particles or branes with the same charge-to-mass ratio. We call this phenomenon “electric-magnetic co-scaling.” These towers are, furthermore, aligned; their charge-to-mass ratio vectors point in the same direction, as measured by the kinetic terms of the gauge fields. I will discuss examples and heuristic reasons for this to be true, and comment on phenomenological applications, including an upper bound on the quantum gravity cutoff in theories of extra-dimensional axions. (Based on 2406.08543 and work in progress with Tom Rudelius and Christopher Tudball.)

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