Fate of a recent conformal fixed point and beta-function in the SU(3) BSM gauge theory with ten massless flavors

We report new results on the beta-function of an important BSM gauge theory with ten massless fermion flavors in the fundamental representation of the SU(3) color gauge group. The existence of an infrared fixed point (IRFP) was reported in [PoS LATTICE2016 (2017) 228] at $g^2 \sim 7.0$ of the renormalized gauge coupling. We find a positive and rapidly increasing beta-function in the extended gauge coupling range $5 < g^2 < 8.5$ ruling out the reported IRFP with high statistical significance. Our results also disagree at strong coupling with a much smaller and downward trending beta-function of the ten-flavor model in [EPJ Web Conf. 175 (2018) 03006] but extended only to $g^2 = 6$. It would be misguided to interpret the origin of the disagreements as non-universal staggered fermion discretization of the ten-flavor model in our work.

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