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Mixed 't Hooft anomalies of asymptotically and anomaly-free SU(N) chiral gauge theories for arbitrary large N

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The presence of mixed 't Hooft anomalies between zero and one-form symmetries could further constraint the possible low energy phases of some chiral gauge theories. By first constructing the full global symmetry group that acts faithfully on the fermions, we compute all the anomalies in the UV regime, which include mixed ' t Hooft anomalies between one-form and zero-form symmetries, for a large class of previously overlooked SU(N) $4d$ chiral guage theories that satisfy asymptotic freedom and anomaly cancellation for arbitrary large N. A three-loop beta function analysis suggests that some of these theories may develop a Banks–Zaks fixed point in the IR.

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