Higher symmetries and anomalies in $\mathfrak{so}$ QCD and $\mathcal{N}=1$ duality

Yasunori Lee[1], Kantaro Ohmori[2], and Yuji Tachikawa[1]

[1] Kavli Institute for the Physics and Mathematics of the Universe (WPI), University of Tokyo, Kashiwa, Chiba 277-8583, Japan
[2] Department of Physics, Faculty of Science, University of Tokyo, Bunkyo, Tokyo 113-0033, Japan

We study higher symmetries and anomalies of 4d $\mathfrak{so}(2n_c)$ gauge theory with $N_f = 2n_f$ flavors. We find that they depend on the parity of n_c and n_f, on the global form of the gauge group, and the discrete theta angle. The contribution from the fermions plays a central role in our analysis. Furthermore, our conclusion applies to $\mathcal{N}=1$ supersymmetric cases as well, and we see that higher symmetries and anomalies match across the duality $\mathfrak{so}(2n_c) \leftrightarrow \mathfrak{so}(2n_f - n_c + 4)$ of Intriligator and Seiberg.

Contents

1 Introduction and summary