

**Hadronic light-by-light scattering contribution to the muon  $g - 2$   
from lattice QCD: Methodology**

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Abstract: The hadronic light-by-light scattering contribution to the muon  $g - 2$  is the most troublesome component of its theoretical prediction; (1) it cannot be determined from the other measurable quantities, (2) the dimensional argument and the estimation based on hadronic models imply that the magnitude of this contribution is comparable to the discrepancy between the standard model prediction and the experimental value. The direct approach to evaluate the hadronic light-by-light scattering contribution requires the evaluation of the correlation function of *four* hadronic electromagnetic currents, and to sum up it over two independent four momenta, which is far from the reach of direct lattice simulation. In this talk, we propose an alternative method using combined (QCD + QED) lattice simulations to evaluate the hadronic light-by-light scattering contribution.