Contribution ID: **84**   Type: **not specified**

Massive Gauge Theories from Consistency Conditions of Amplitudes

Tuesday, 26 August 2025 16:40 (20 minutes)

Based on the general principles of Lorentz symmetry and unitary, we introduce two consistency conditions – on-shell gauge symmetry and strong massive-massless continuation – in constructing amplitudes of massive gauge theory with elementary particles. Combined with the little group transformation and consistent factorization, we construct 3-point and 4-point vector boson/scalar amplitudes under these conditions. Given the particle masses, almost all possible vertices, including those involving Goldstone modes, are uniquely fixed. The only exceptions are triple and quartic scalar self-couplings. We also discuss different underlying models behind particles are assigned different masses. Our main conclusion is that the only theories that can be constructed under the proposed conditions are either theories with spontaneous symmetry breaking(both abelian and non-abelian) or Stueckelberg theory (only abelian).

Primary author: Prof. CHEN, Junmou (Jinan University)

Presenter: Prof. CHEN, Junmou (Jinan University)

Session Classification: Parallel talks (2)