New parameterization for Quantum Degenerate Systems

JIANDA WU, CHAO XU, CONGJUN WU, Univ of California - San Diego — We present a new parameterization method describing degenerate quantum systems with maximum allowed parameter space. It is deeply connected to the Grassmannian manifold embedded with specially constructed Plücker coordinates. We demonstrate that the parameterization naturally leads to Yang monopole holonomy in a special limit at the SO(5) case. Further concrete examples are present to show how the parameterization may expand conventional understandings in topological systems, where possible practical applications are also discussed.