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Timothy Nguyen* (timothyn@math.msu.edu), 619 Red Cedar Road, Room C207, East Lansing, MI 48824. *2D Quantum Yang-Mills Theory and Stochastic Analysis*. Preliminary report.

Quantum Yang-Mills theory in two dimensions is special in that it is exactly soluble. More precisely, expectation values of Wilson loop observables can be evaluated exactly in terms of Brownian motion on the given gauge group. On the other hand, most quantum field theories can only be analyzed perturbatively via Wick's Lemma applied to Gaussian measures. In this talk, we show how perturbation theory and the exact solution to 2D Yang-Mills are related through the appropriate stochastic analysis. (Received January 19, 2015)