Center Symmetry Restoration in Two Flavor Large N Yang Mills with Adjoint Fermions

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- Higgs appears as a composite particle of "techniquarks" – new fermions with new gauge interaction.
- W,Z pick up masses by eating pseudo Goldstone bosons associated with spontaneous breaking of the new global chiral symmetries.

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- Technicolor dynamics require non-perturbative techniques to make predictions about chiral condensate, technihadron spectrum, etc.
- Dynamics cannot be exactly as scaled down QCD, due to possible conflicts with EW precision experiments.
- One possible scenario is for the theory to be near conformal or *walking*.
- Minimal key ingredients towards walking dynamics are using an SU(2) gauge group with $N_f = 2$ (or 3?) (Dietrich, Sannino, et al).

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- Simulated by multiple groups by multiple means (Catterall-Giedt-Sannino-Schneible, Debbio-Luicini-Patella-Pica-Rago, Hietanen-Rummukainen-Tuominen, et al).

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- Thus EK reduction may yield an alternative route to investigating near conformal behavior of ETC.

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- Polyakov (or Wilson) lines become relevant order parameters.

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- Heavy adjoint flavors with p.b.c. in circumstances which mimics $R^3 \times S^1$ has been simulated (Cossu and D'elia).

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6. Standard HMC algorithm used, order of 1000 measurements.

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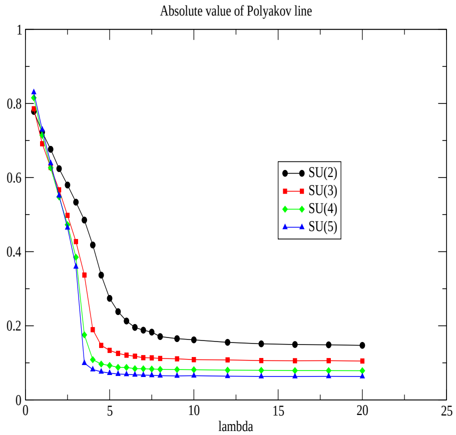

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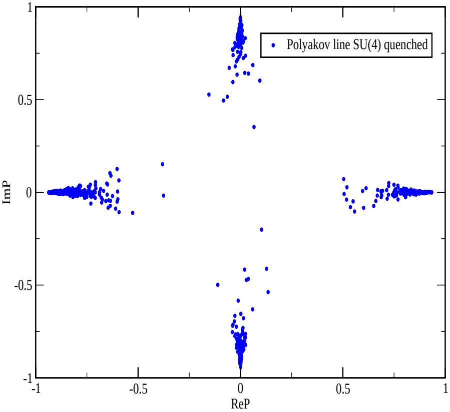

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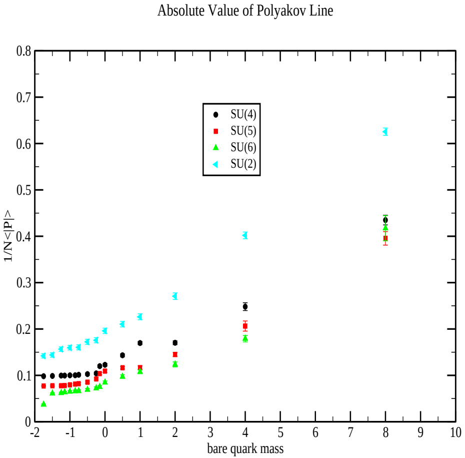

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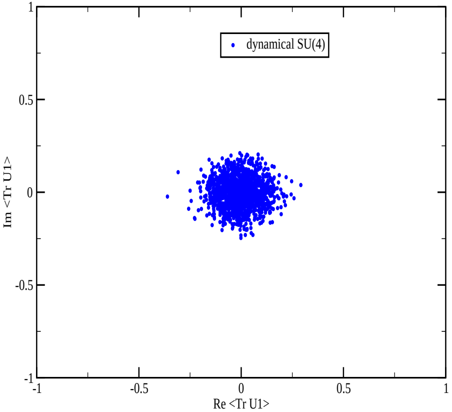

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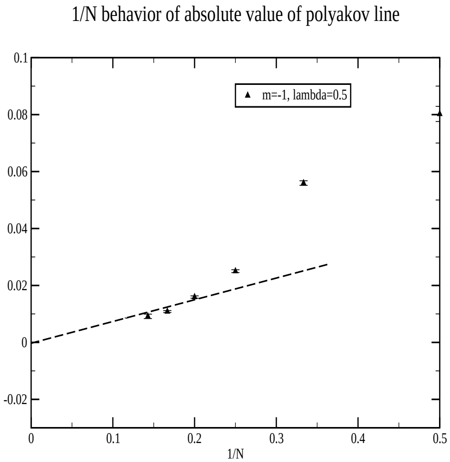

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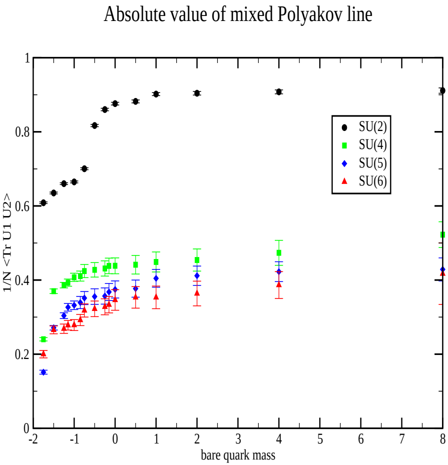

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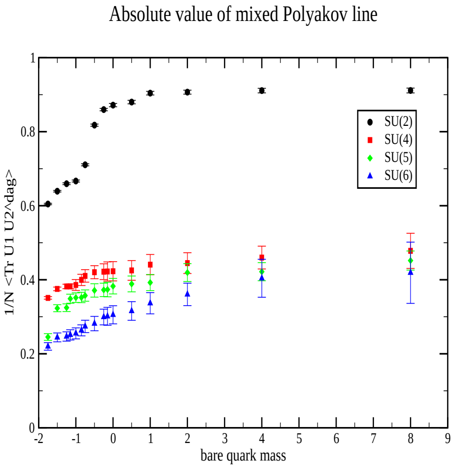

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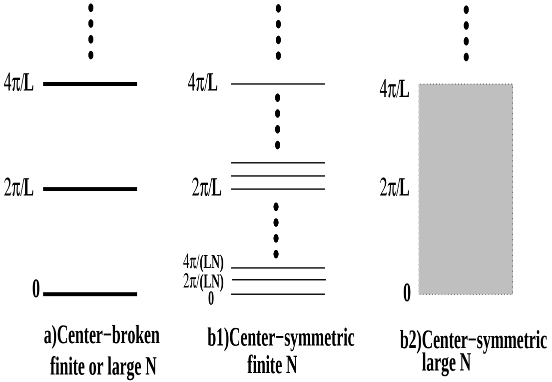
Kaluza Klein towers emerge from pbc and compactification..



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- Absolute value of $< P_\mu >$ consistent with zero as λ goes to 0.
- More exotic order parameters like $< P_1 P_2^\dagger > \rightarrow 0$.
- Our results indicate that center symmetry is also restored in the two flavor case.

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- For more information: arXiv:1006.2469v1, "Realization of Center Symmetry in Two Adjoint Flavor Large-N Yang-Mills."

FIN

Thank you very much! Also, I thank A. Hietanen, R. Narayanan and M. Ünsal for useful discussions. I am also thankful for funding from Simon Catterall's DOE grant and the Syracuse STEM Graduate Fellowship.