Approximate ground-state-O(6) symmetry in the triangle without cubic interactions

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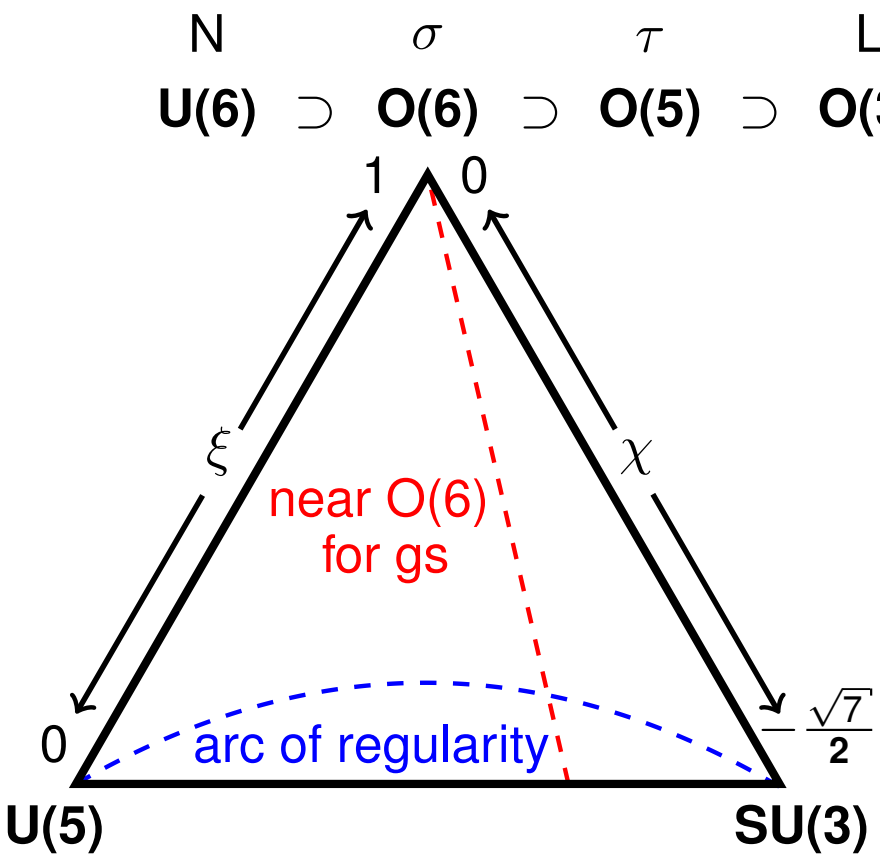


$$\Delta\sigma = \sqrt{\langle\sigma^2\rangle - \langle\sigma\rangle^2}$$

$$= \sqrt{\langle\psi \mid \sigma^2 \mid \psi\rangle - \langle\psi \mid \sigma \mid \psi\rangle^2}$$

$$= \sqrt{\sum_i \alpha_i^2\sigma_i^2 - \left(\sum_i \alpha_i^2\sigma_i\right)^2}$$

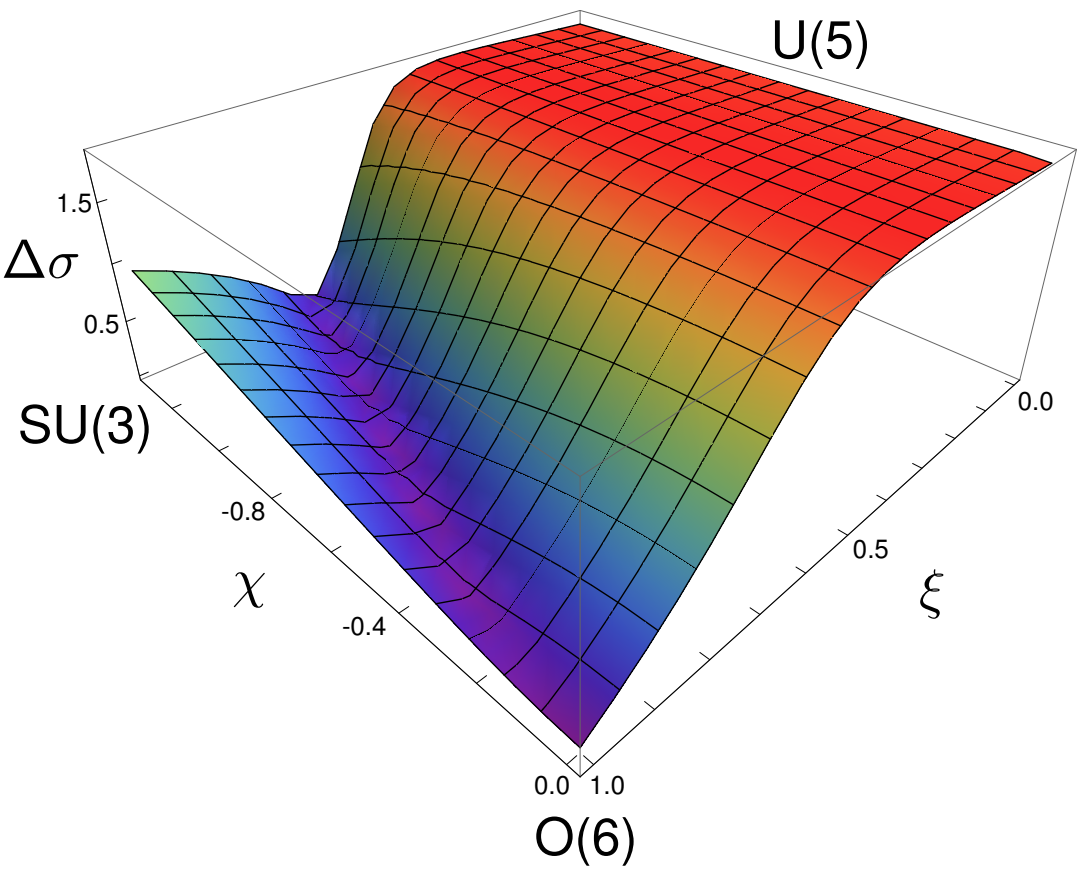
$$\mid \psi\rangle = \sum_i \alpha_i \mid \sigma_i, \tau_i\rangle$$

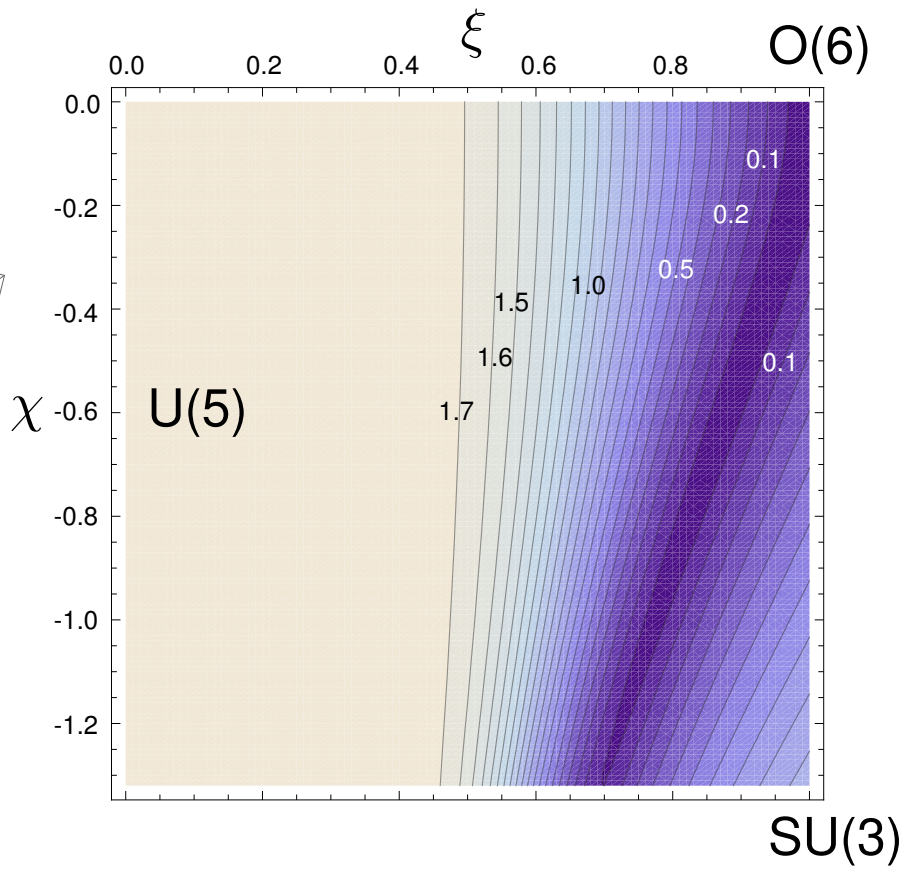
wavefunctions calculated by **"ARBMODEL"**, S.Heinze

Approximate O(6) symmetry inside the triangle

Groundstate σ fluctuations

- 0^+_{gs}, $N = 8$

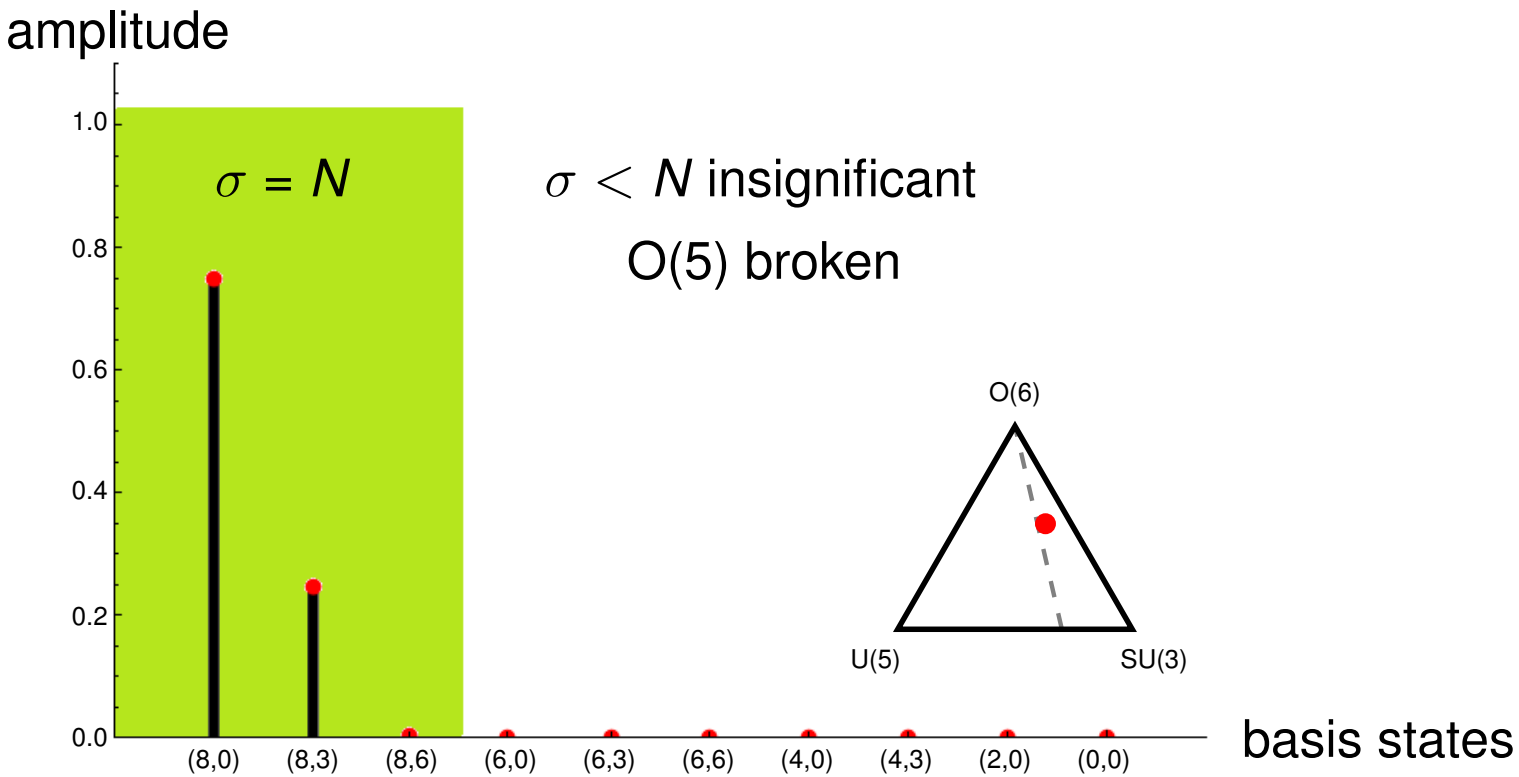




σ-fluctuations calculated by **"ARBMODEL"** (S.Heinze)
Ch. Kremer, B.Sc. thesis, TU Darmstadt, (2009)
R. Trippel, B.Sc. thesis, TU Darmstadt, (2010)

Approximate O(6) symmetry inside the triangle

Basis state decomposition



Amplitude squares of the O(6) basis states for the 0_1^+ state at $\xi = 0.9$, $\chi = -0.6$.

Ch. Kremer, B.Sc. thesis, TU Darmstadt, (2009)
R. Trippel, B.Sc. thesis, TU Darmstadt, (2010)

Approximate O(6) symmetry inside the triangle

Parameter space of (almost) good O(6)

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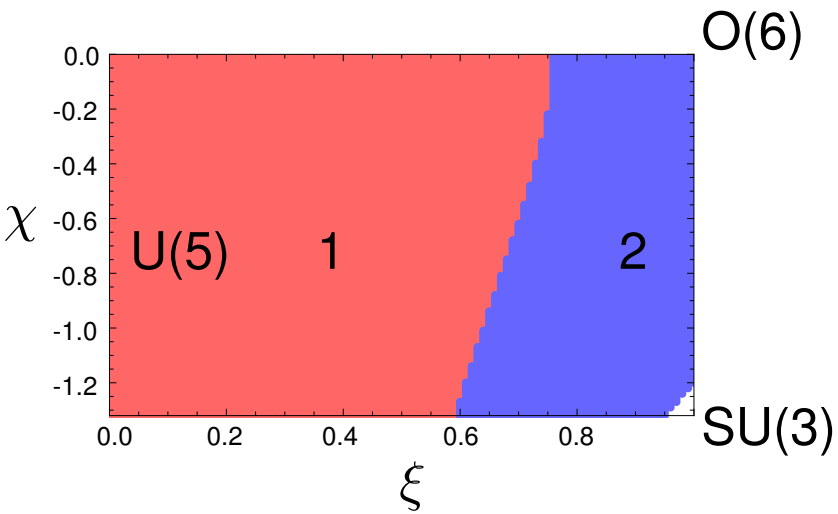
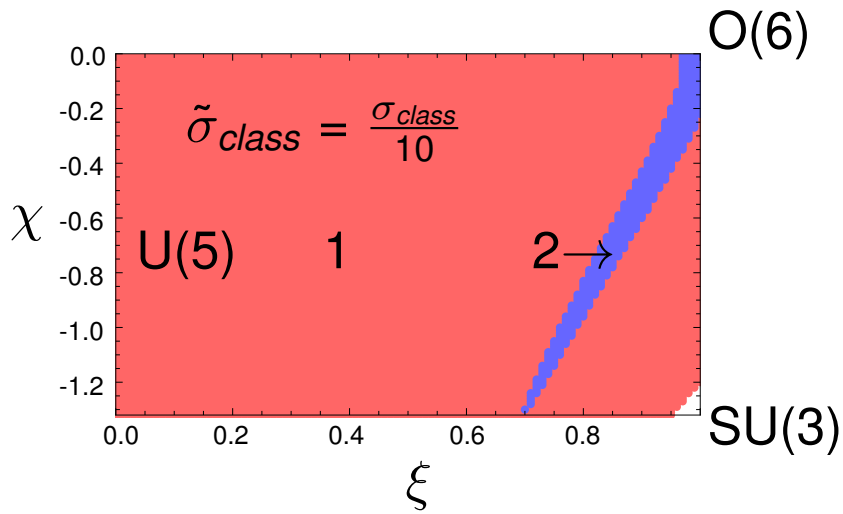
- quantification of O(6) symmetry

$$\Delta\sigma_{class} = \frac{\delta\sigma_{min}}{2\sqrt{2\ln 2}}$$

$$\Delta\sigma \begin{cases} > \sigma_{class} & \text{broken} \\ \leq \sigma_{class} & \text{distorted} \end{cases}$$





1 - broken O(6)

2 - distorted O(6)

New region in the triangle (quadratic interactions only) where gs has O(6) symmetry far away from O(6) dsl.

see contribution of D.Bonatsos