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Time reparametrization symmetry in a short-range p-spin model GCINA MAVIMBELA, Dept of Physics and Astronomy, Ohio University, HORA-CIO E. CASTILLO, Dept of Physics and Astronomy, Ohio University — We explore the existence of time reparametrization symmetry in the p-spin model. We follow closely the approach previously used to prove the presence of this symmetry in the Edwards-Anderson model. Using the Martin-Siggia-Rose generating functional, we analytically probe the long-time dynamics.We introduce a cut-off in the time difference $\tau_0 \leq t - t'$ and perform a Renormalization Group analysis where we systematically integrate over short-time scale fluctuations. We find that the RG flow converges to a fixed point that is invariant under reparametrizations of the time variable. This continuous symmetry is broken in the glass state and we argue that this gives rise to the presence of Goldstone modes. We expect the Goldstone modes to determine the properties of fluctuations in the glass state.

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