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Relaxation in the beta-FPUT chain for small N TYLER BARRETT, SURAJIT SEN, State Univ of NY - Buffalo — The study of the dynamics of the Fermi-Pasta-Ulam-Tsingou (FPUT) chain remains a challenging problem. Inspired by the recent work of Onorato et al. (PNAS 112, 4208 (2015)) on thermalization in the FPUT system, we report a study of relaxation processes in a 2-body FPUT system in the canonical ensemble, with comments on 3- and 4-body systems as well. The study demonstrates an application of the Recurrence Relations Method (RRM) introduced by Zwanzig, Mori, Lee and others to weakly nonlinear FPUT systems. We have obtained the first 200 levels of the continued fraction representation of the Laplace transformed momentum autocorrelation function (ACF) for the 2-body system. The ACF resulting from RRM techniques is shown for several system configurations and compared against numerical simulation in order to evaluate the efficacy of the RRM in these regimes, showing good agreement for short time scales.

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