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Binary Lennard-Jones Fluids: A Look Through Time Series Analysis[1] THEODOROS KARAKASIDIS, ATHANASIOS FRAGKOU, ANTONIOS LIAKOPOULOS, Hydromechanics Laboratory, School of Engineering, University of Thessaly, 38334 Volos, Greece — In this paper we discuss the dynamical behavior of a binary Lennard-Jones fluid simulated at the atomic scale using Molecular Dynamics. The system was simulated at several fluid states as a function of system density and temperature and its instantaneous temperature was recorded. We report preliminary results on time-series analyses of the instantaneous system temperature as well as of the temperature of its two constituents. In this course we employ both linear (autocorrelation function and power spectrum) and non-linear tools (average mutual information and correlation dimension). It turns out that the time series present a complex $1/f^a$ behavior. The dependence of the regimes on the physical state of the system is discussed.

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