Hidden temperature profile in the Kipnis Marchioro Presutti model

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In the one dimensional KMP model, there is a nonnegative real value associated with each site in $x = 1, ..., n$. When a Poisson clock rings at the bond (x, y) with values X, Y, those values are substituted by $U(X + Y)$ and $(1 - U)(X + Y)$, respectively, where U is a uniform random variable in $(0, 1)$. We show that the invariant measure for this process in an interval with boundary conditions $T+$ and $T-$ is the distribution of a vector $(T_i . X_i)_i$, where X_i are *iid* exponential random variables of parameter 1 and the law of (T_i) is the invariant measure for a Deffuant model with boundary conditions $T+$ and $T-$. In order to show this, we consider a coupling between a homogeneous KMP model $X(t)$ and a Deffuant model $T(t)$, whose product $X_i(t) . T_i(t)$ behaves like the non homogeneous KMP. The approach is used to analyse the hydrodynamics of the model. Joint work with Anna de Masi and Davide Gabrielli.