

Erratum: Hydrodynamics and Time Correlation Functions for Cellular Automata

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The Green-Kubo formulas (5.12) for the diffusivities of the spurious diffusive modes in CA fluids are correct, but the expressions for the associated scalar transport coefficients $\kappa_1(s)$ and $\kappa_2(s)$ in (5.13) are not. They should read

$$\begin{aligned}\kappa_1(s) &= (\chi_l)^{-1} \sum_{t=0}^* e^{-st} \sum_{\mathbf{r}} (-1)^{t+\mathbf{B}\cdot\mathbf{r}} \langle \sigma_{\perp}(0, 0) \sigma_{\perp}(\mathbf{r}, t) \rangle \\ \kappa_1(s) + \kappa_2(s) &= (\chi_l)^{-1} \sum_{t=0}^* \left| e^{-st} \sum_{\mathbf{r}} (-1)^{t+\mathbf{B}\cdot\mathbf{r}} \langle \sigma_{\parallel}(0, 0) \sigma_{\parallel}(\mathbf{r}, t) \rangle \right.\end{aligned}\tag{5.13}$$

where σ_{\perp} and σ_{\parallel} are components of the stress tensor orthogonal and parallel to any of the vectors $\hat{\beta}$; $\sigma_{\parallel} = \hat{k}_i \hat{\beta}_j \sigma_{ij}$ and $\sigma_{\perp} = \hat{k}_i \hat{\beta}_{\perp j} \sigma_{ij}$. Here $\hat{\beta}_{\perp}$ is orthogonal to $\hat{\beta}$ and σ_{ij} is the stress tensor. These results follow from the fact that the staggered diffusion coefficient $A_{\beta}(\hat{k}, s) = \hat{k}_i \hat{k}_j \Delta_{ij}(\mathbf{B})$ is related to a second order tensor field [see Eq. (5.11)] with the representation $\Delta_{ij}(\mathbf{B}) = \kappa_1(s) \delta_{ij} + \kappa_2(s) \hat{\beta}_i \hat{\beta}_j$.

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