Erratum: Thermodynamic framework for discrete optimal control in multiphase flow systems [Phys. Rev. E 60, 1520 (1999)]

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Some errors appear in Eqs. (12) and (14). These equations are valid only in the special case of models of analytical mechanics in which case the vector **f** that describes the process rates has a special form $\mathbf{f}(\mathbf{x},t,\mathbf{u})\equiv\mathbf{u}$. In the general case of an arbitrary rate vector, Eq. (12) should read

$$\frac{\partial V}{\partial \mathbf{x}}\cdot\frac{\partial f(\mathbf{x},t,\mathbf{u})}{\partial \mathbf{u}}=\frac{\partial \tilde{f}_0(\mathbf{x},t,\mathbf{u})}{\partial \mathbf{u}}. \tag{12}$$

Equation (13) of the paper,

$$\frac{\partial V}{\partial t}+\frac{\partial V}{\partial \mathbf{x}}\cdot\mathbf{f}(\mathbf{x},t,\mathbf{u})-\tilde{f}_0(\mathbf{x},t,\mathbf{u})=0, \tag{13}$$

is valid in this general case. However, Eq. (14) of the paper should be replaced by its generalized form following from Eq. (12) above. Therefore, the text below Eq. (13) and the generalized Eq. (14) should read:

With the momentum-type variable $\mathbf{p}\equiv-\partial V/\partial\mathbf{x}=\partial R/\partial\mathbf{x}$ and Eq. (12) written in the form

$$\mathbf{p}\cdot\frac{\partial f(\mathbf{x},t,\mathbf{u})}{\partial \mathbf{u}}=-\frac{\partial \tilde{f}_0(\mathbf{x},t,\mathbf{u})}{\partial \mathbf{u}}\equiv\frac{\partial \tilde{l}_0(\mathbf{x},t,\mathbf{u})}{\partial \mathbf{u}}, \tag{14}$$

we can solve Eq. (14) in terms of **u** to obtain the function $\mathbf{u}(\mathbf{p},t,\mathbf{x})$. When we substitute this function into Eq. (13), an energylike Hamiltonian (15) of the external process emerges.

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