ERRATA

NONCANONICAL HAMILTONIAN DENSITY FORMULATION OF HYDRODYNAMICS AND IDEAL MAGNETOHYDRODYNAMICS. Philip J. Morrison[(a)] and John M. Greene [Phys. Rev. Lett. 45, 790 (1980)].

We wish to point out that the magnetic field portions of the Poisson brackets presented in Eqs. (6) and (9) require the initial condition $\nabla\cdot\vec{B}=0$ for the validity of the Jacobi condition. This requirement is easily removed by adding a term, proportional to $\nabla\cdot\vec{B}$, to these equations. The last term of Eq. (6) (within the curly braces) becomes

$$-\int_v \left\{ \vec{B}\cdot\left(\frac{1}{\rho}\frac{\delta F}{\delta \vec{v}}\cdot\nabla\frac{\delta G}{\delta \vec{B}} - \frac{1}{\rho}\frac{\delta G}{\delta\vec{v}}\cdot\nabla\frac{\delta F}{\delta\vec{B}}\right) + \vec{B}\cdot\left[\left(\nabla\frac{1}{\rho}\frac{\delta F}{\delta\vec{v}}\right)\cdot\frac{\delta G}{\delta\vec{B}} - \left(\nabla\frac{1}{\rho}\frac{\delta G}{\delta\vec{v}}\right)\cdot\frac{\delta F}{\delta\vec{B}}\right]\right\} d\tau.$$

Similarly, the last term of Eq. (9) becomes

$$-\int_v\left\{B_i\left(\frac{\delta F}{\delta M_l}\partial_l\frac{\delta G}{\delta B_i} - \frac{\delta G}{\delta M_l}\partial_l\frac{\delta F}{\delta B_i}\right) + B_i\left[\left(\partial_i\frac{\delta F}{\delta M_l}\right)\frac{\delta G}{\delta B_l} - \left(\partial_i\frac{\delta G}{\delta M_l}\right)\frac{\delta F}{\delta B_l}\right]\right\}d\tau,$$

where repeated index notation is used. We emphasize that the Jacobi condition is satisfied in complete generality for these brackets,[1] independent of $\nabla\cdot\vec{B}=0$. The dynamical equations of motion,

$$\vec{v}_t = -\nabla(\tfrac{1}{2}v^2)+\vec{v}\times(\nabla\times\vec{v}) - \rho^{-1}\nabla(\rho^2 U_\rho) - \rho^{-1}\nabla\cdot(\tfrac{1}{2}B^2\overleftrightarrow{I} - \vec{B}\vec{B}),$$

$$\vec{B}_t = -\vec{B}\nabla\cdot\vec{v}+\vec{B}\cdot\nabla\vec{v}-\vec{v}\cdot\nabla\vec{B},$$

that are obtained from the Poisson bracket in this form manifestly have the symmetries of the ten-parameter Galilean group. Elsewhere one of us (P.J.M.) has shown how our brackets together with dynamical constants of magnetohydrodynamics generate the infinitesmal transformations of this group.[2]

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[1]For example, they can be obtained by first modifying the canonical form given by V. E. Zakharov and E. A. Kuznetsov {Dokl. Akad. Nauk SSSR 15, 1288 (1971) [Sov. Phys. Dokl. 15, 913 (1971)]} by letting $\vec{M}=(\nabla\overleftrightarrow{T})\cdot\vec{B}-\vec{B}\cdot\nabla\overleftrightarrow{T}-\overleftrightarrow{T}\nabla\cdot\vec{B}+\rho\nabla\varphi+\sigma\nabla\psi$, where $\overleftrightarrow{T}$, φ, and ψ are Clebsch-like potentials conjugate to $\vec{B}$, ρ, and σ, respectively, and then transforming to physical variables.

[2]P. J. Morrison, in Proceedings of the La Jolla Institute Workshop on Mathematical Methods in Hydrodynamics and Integrability in Related Dynamical Systems, La Jolla, California, 7 December 1981, edited by M. Tabor (American Institute of Physics, New York, to be published).

EFFECTIVE HARMONIC-FLUID APPROACH TO LOW-ENERGY PROPERTIES OF ONE-DIMENSIONAL QUANTUM FLUIDS. F. D. M. Haldane [Phys. Rev. Lett. 47, 1840 (1981)].

The condition for stability of the quantum fluid state against pinning by a substrate potential commensurate with the mean particle separation (p. 1842, top of column 2) should read: "The fluid state is only stable if the sine-Gordon coupling parameter[10] satisfies $\beta^2 = 2\pi n^2\eta > 8\pi$, i.e., $\eta^{-1} < \frac{1}{4}n^2$, or $\eta > 4/n^2$." (This replaces the opposite condition $\beta^2 < 8\pi$ in the printed text.) The condition $\beta^2 > 8\pi$ means that the zero-point density fluctuations of the fluid are sufficiently strong to resist pinning by the substrate.

Note also that the phase field $\varphi(x)$ [intended as $\phi(x)$, as in Refs. 1 and 2] should not be confused with the Bogoliubov-transformation parameter $\varphi(q)$ introduced in Eq. (5); its boundary conditions are $\varphi(x+L)=\varphi(x)+\pi J$, [*not* $\varphi(x)+\Pi J$, as printed].