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Erratum

Erratum to: "Integrable hierarchy for multidimensional Toda equations and topological–anti-topological fusion" [J. Geom. Phys. 46 (2003) 21–47]☆

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Through an unfortunate error by the publisher in the 7th, 8th and 14th line of the first paragraph following Eq. (3.36) the distinction between the symbols ϕ and φ was lost. The correct paragraph should read as follows:

Here we illustrate the above construction for $m = 1$ with the AKNS Lax operator $L = \partial_x - r\partial_x^{-1}q$ defining the spectral problem $L(\psi) = \lambda\psi$. The self-commuting isospectral flows ($n > 0$): $\partial_n r = B_n(r)$ and $\partial_n q = -B_n^{\dagger}(q)$ with $B_n = (L^n)_+$ belong to the positive part of the AKNS hierarchy. L can be described as a ratio of two ordinary monic differential operators as $L = L_2 L_1^{-1}$, where L_1, L_2 denote monic operators $L_1 = (\partial_x + \varphi_1' + \varphi_2')$ and $L_2 = (\partial_x + \varphi_1')(\partial_x + \varphi_2')$ of, respectively, orders 1 and 2. A monic differential operator L_2 is fully characterized by elements of its kernel, $\phi_1 = \exp(-\varphi_2)$ and $\phi_2 = \exp(-\varphi_2)\int^x \exp(\varphi_2 - \varphi_1)$. Its inverse L_2^{-1}, is given by $L_2^{-1} = \sum_{\alpha=1}^{2}\phi_\alpha\partial_x^{-1}\psi_\alpha$, where $\psi_1 = -\exp(\varphi_1)\int^x \exp(\varphi_2 - \varphi_1)$ and $\psi_2 = \exp(\varphi_1)$ are kernel elements of the conjugated operator $L_2^{\dagger} = (-\partial_x + \varphi_2')(-\partial_x + \varphi_1')$, see [26] and references therein. In this notation, $L = \partial_x + L_2(\exp(-\varphi_1 - \varphi_2))\partial_x^{-1}\exp(\varphi_1 + \varphi_2)$ and accordingly

$$q = -\exp(\varphi_1 + \varphi_2), \qquad r = -(\varphi_1'' - \varphi_1'\varphi_2')\exp(-\varphi_1 - \varphi_2). \tag{3.37}$$

Similarly, the inverse of L is also given as a ratio of differential operators $L^{-1} = L_1 L_2^{-1} = \sum_{\alpha=1}^{2} L_1(\phi_\alpha)\partial_x^{-1}\psi_\alpha$. The functions $\Phi_\alpha^{(-1)} \equiv L_1(\phi_\alpha)$ and $\Psi_\alpha^{(-1)} \equiv \psi_\alpha$ satisfy the same flow equations as r and q with respect to the positive flows of the AKNS hierarchy.

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