Corrections to

Olver, P.J., Invariant submanifold flows, *J. Phys. A* **41** (2008), 344017.

Last updated: October 21, 2015.

page 7, equation (3.11):

Switch the j and k subscripts on the R's in the second formula:

$$d_{\mathcal{H}}\,\varpi^i = -\sum_{j<k} Y^i_{jk}\,\varpi^j\wedge\varpi^k, \quad \text{where} \quad Y^i_{jk} = \sum_{\kappa=1}^{r}\sum_{j=1}^{p}\big[\,R^\kappa_k\,\iota(D_j\xi^i_\kappa) - R^\kappa_j\,\iota(D_k\xi^i_\kappa)\,\big] \tag{3.11}$$

page 8, line –1:

Change $\mathcal{E}^\alpha_J = (\mathcal{E}^\alpha_J,\dots,\mathcal{E}^\alpha_J)$ to $\mathcal{E}^\alpha_J = (\mathcal{E}^\alpha_{J,1},\dots,\mathcal{E}^\alpha_{J,q})$

page 11, third displayed formula:

The last 3 expressions should have a minus sign in front:

$$\begin{aligned} d_{\mathcal{H}}\,d_{\mathcal{V}}\,K = -\,d_{\mathcal{V}}\,d_{\mathcal{H}}\,K &= -\,d_{\mathcal{V}}\left[\sum_{j=1}^{p}(\mathcal{D}_jK)\,\varpi^j\right]\\ &= -\sum_{j=1}^{p}\big[\;d_{\mathcal{V}}(\mathcal{D}_jK)\wedge\varpi^j + (\mathcal{D}_jK)\;d_{\mathcal{V}}\,\varpi^j\;\big]\\ &= -\sum_{j=1}^{p}\left[\mathcal{A}_{\mathcal{D}_jK}(\vartheta) + \sum_{i=1}^{p}(\mathcal{D}_iK)\,\mathcal{B}^i_j(\vartheta)\right]\wedge\varpi^j. \end{aligned}$$

page 12, line 7:

Change "n^{th} order differential functions" to "$(n+1)^{\text{st}}$ order differential functions"

page 12, line 10:

Change n to $n+1$ twice in the formula $(x,u^{(n+1)}) = \mathrm{j}_{n+1}S|_z$.

page 14, equation (4.10):

The first summation should only be over k:

$$\mathcal{D}_jI^i + \sum_{k=1}^{p} Y^i_{jk}I^k + \sum_{\alpha=1}^{q}\mathcal{B}^i_{j\alpha}(J^\alpha) = 0. \tag{4.10}$$

page 15, equation (4.11):

There is a missing minus sign on the right hand sides:

$$\mathcal{D}I = -\,\mathcal{B}(J) = -\sum_{\alpha=1}^{q}\mathcal{B}_\alpha(J^\alpha), \tag{4.11}$$

page 15, equation (4.12):

There is a missing "$\wedge\, \varpi$" on the right hand sides:

$$d_{\mathcal{V}}\, \varpi = \mathcal{B}(\vartheta) \wedge \varpi = \sum_{\alpha=1}^{q} \mathcal{B}_{\alpha}(\vartheta^{\alpha}) \wedge \varpi. \tag{4.12}$$

page 15, equation (4.13):

Delete the minus sign on the right hand side:

$$\mathcal{D} I = \kappa\, J. \tag{4.13}$$

page 15, line 12:

Change $I = -\frac{1}{2}\,\kappa^2$ to $I = \frac{1}{2}\,\kappa^2$.

page 18, line –10:

Insert a minus sign in $\mathcal{B} = \big(-\kappa,\ 0\,\big)$.

page 18, line –8:

Change the term $K\,\mathbf{t}_2$ to $K\,\mathbf{n}_2$.

page 18, revise last sentence:

In particular, the flow with $J = 0$, $K = \kappa$ induces the vortex filament flow

$$\begin{pmatrix} \kappa_t \\ \tau_t \end{pmatrix} = \mathcal{R} \begin{pmatrix} 0 \\ \kappa \end{pmatrix}$$

which is integrable and can be mapped to the nonlinear Schrödinger equation via the Hasimoto transformation, [**25**, **32**, **37**]. Similarly, the flow with $J = \kappa_s,\ K = \kappa\,\tau$, maps to the integrable complex modified Korteweg-deVries equation in the nonlinear Schrödinger hierarchy.

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