Erratum

Homoclinic connections and numerical integration (Numerical Algorithms 14 (1997) 261–267)

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An unstable solution $y(t)$ to the system of ODEs (1) can be represented as

$$y(t) = \sum_{|\alpha|=1}^{\infty} y_{\alpha} e^{(\lambda, \alpha)t} \quad (*)$$

for sufficiently large negative values of t . Here $\lambda_1, \dots, \lambda_k$ are positive eigenvalues of $A = (\partial f / \partial y)(0)$, α are multi-indices and y_{α} are constant vectors. A similar representation holds for a stable solution when t is a sufficiently large positive number.

By an unstable solution to the difference equation (3), approximating (1), (as well as to the difference equation (4)) in the paper was meant a solution that has a representation similar to (*). In the case of equation (4) this representation was given by (5). A stable solution was understood similarly. Accordingly, by a homoclinic solution $y(t)$ was meant a solution that is simultaneously stable and unstable in the above mentioned sense.

Taking into account these remarks, line 7 on p. 262 should be replaced by “does not have homoclinic solutions”.

The words “with zero real part”, line 22, p. 262, should be replaced by “on the unit circle”.

The results of the paper show that the approximating difference equation (3) has no homoclinic solutions of the special type that was mentioned above.