

## Interactive comment on “On periodic solutions associated with the nonlinear feedback loop in the non-dissipative Lorenz model” by B.-W. Shen

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To facilitate discussions, we provide a simple figure illustrating the role of nonlinear feedback loop and its extension in producing recurrent (i.e., periodic or quasi-periodic) solutions in 3D-NLM, 5D-NLM, and 7D-NLM (Figure 1). Detailed derivations and references can be found in the attached pdf file.

Please also note the supplement to this comment:

<http://www.nonlin-processes-geophys-discuss.net/npg-2016-40/npg-2016-40-AC5-supplement.pdf>

Interactive comment on Nonlin. Processes Geophys. Discuss., doi:10.5194/npg-2016-40, 2016.

C1

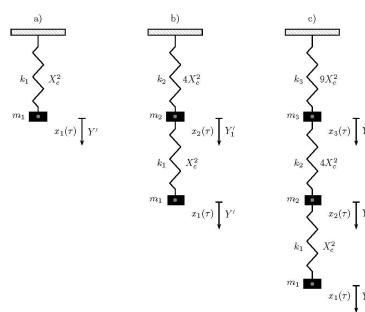


Figure 1: Systems with one mass and one spring (a), two masses and two springs (b) and three masses and three springs (c). These masses are identical, i.e.,  $m_1 = m_2 = m_3$ . These spring constants  $k_1$ ,  $k_2$  and  $k_3$  are selected as  $X_c^2$ ,  $4X_c^2$ , and  $9X_c^2$ , respectively. It is shown that the governing equations for the above systems in panels (a)-(c) are identical to those for the locally linear 3D-NLM, 5D-NLM, and 7D-NLM, respectively. This comparison illustrates how the nonlinear feedback loop and its extension enabled by a proper selection of high wavenumber modes can produce recurrent (i.e., periodic or quasi-periodic) solutions.

Fig. 1.

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