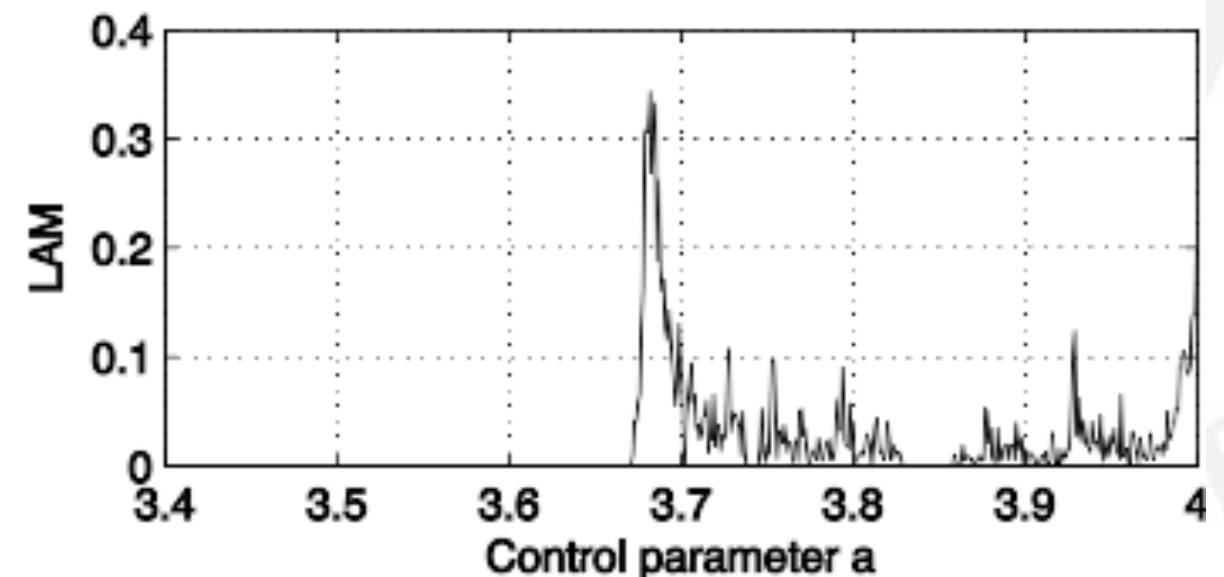
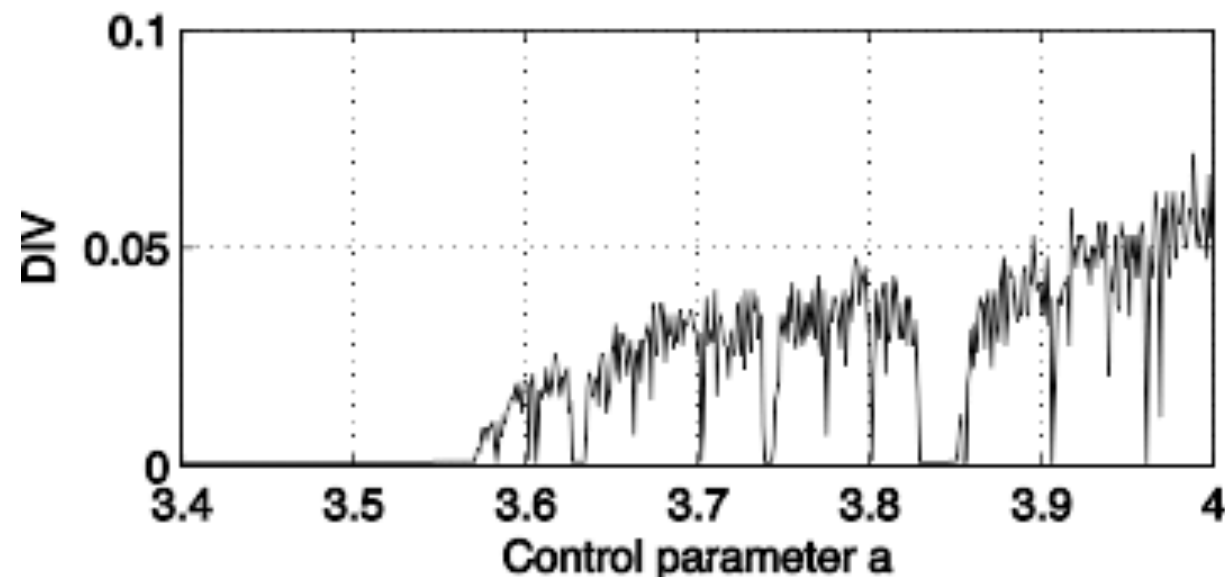
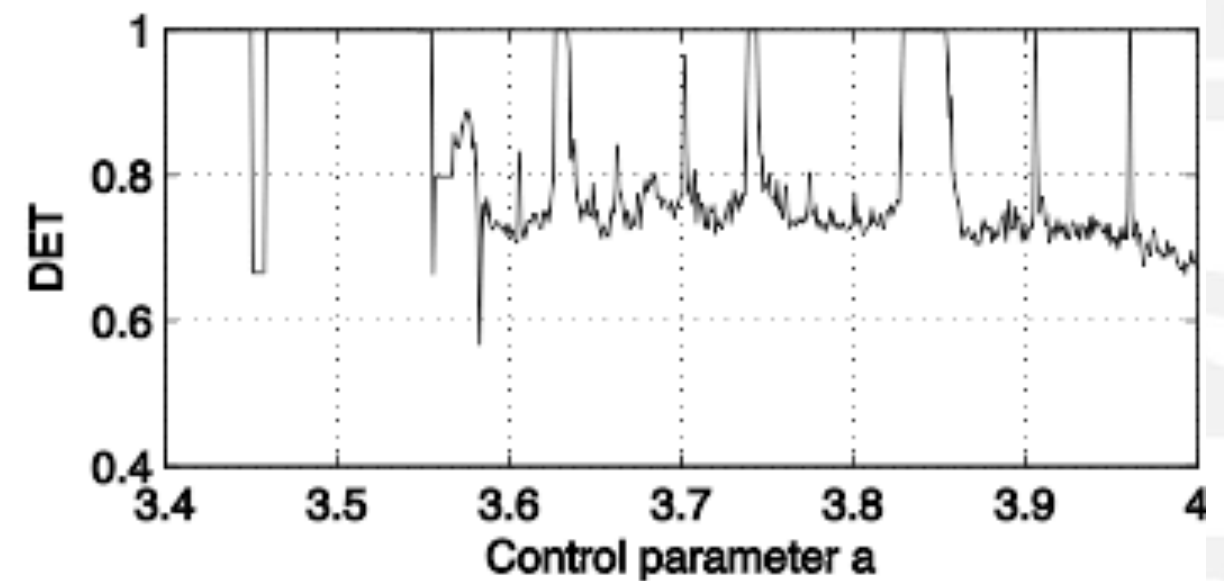
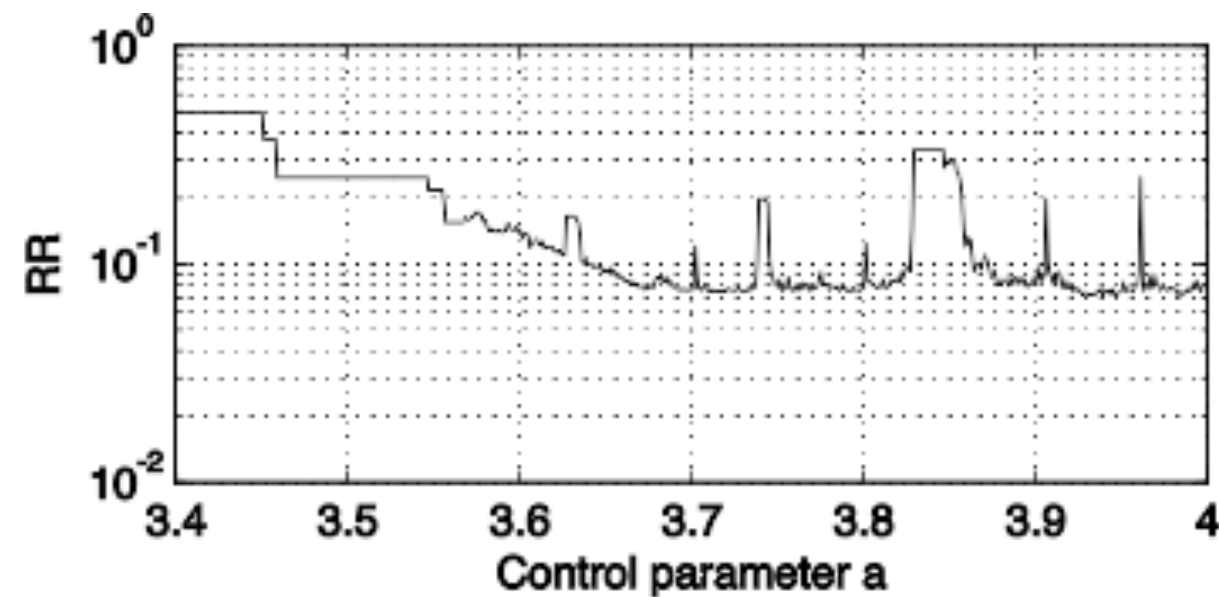


# Logistic map – Transitions revealed by lagged RQA

note:  $a = r$  in bifurcation diagram on previous slide



# Further reading

- The paper by Marwan et al in Physics Reports tells you everything you wanted to know... and more.

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*N. Marwan et al. / Physics Reports 438 (2007) 237–329*

Table 2  
Comparison of RQA measures based on diagonal (*DET*, *L* and *L*<sub>max</sub>) and vertical structures (*LAM*, *TT* and *V*<sub>max</sub>) regarding periodic-chaos/chaos–periodic transitions (PC/CP), chaos–chaos transitions (band merging—BM and inner crisis—IC) and laminar states

Measure	PC/CP transitions	BM and IC	Laminar states
<i>DET</i>	Increases	—	—
<i>L</i>	Increases	—	—
<i>L</i> <sub>max</sub>	Increases	—	—
<i>LAM</i>	Drops to zero	—	Increases
<i>TT</i>	Drops to zero	Increases	Increases
<i>V</i> <sub>max</sub>	Drops to zero	Increases	Increases

Marwan, N., Romano, M. C., Thiel, M., & Kurths, J. (2007). Recurrence plots for the analysis of complex systems. *Physics reports*, 438(5-6), 237-329.

