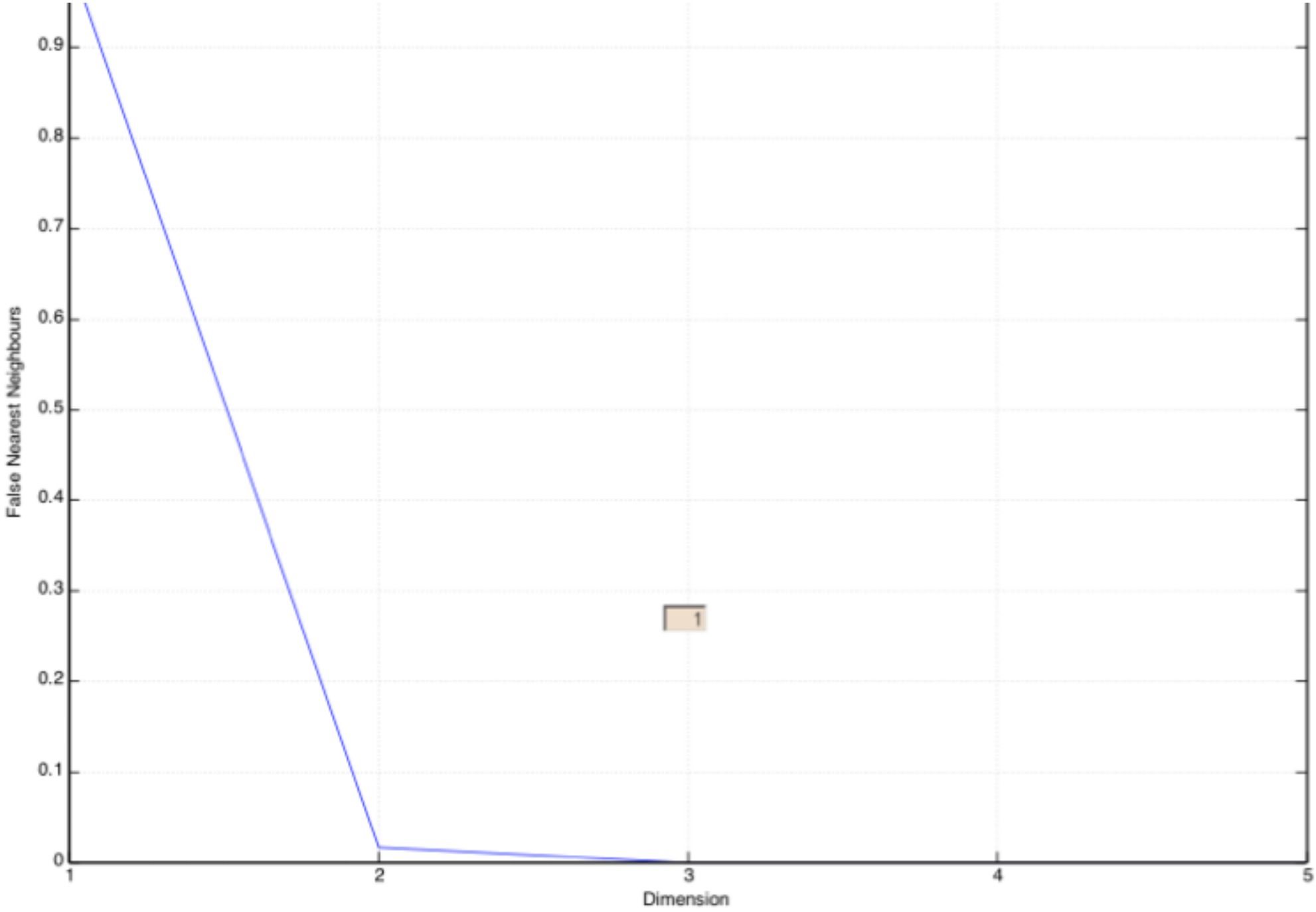
IN·DEI·NOMINE·F

Radboud University Nijmegen

Behavioural Science Institute

Lorenz system – Determine embedding dimensions


False Nearest Neighbours
Dimension
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
2
3
4
5
1

False Nearest Neighbour Analysis
(Kennel et al. 1992)

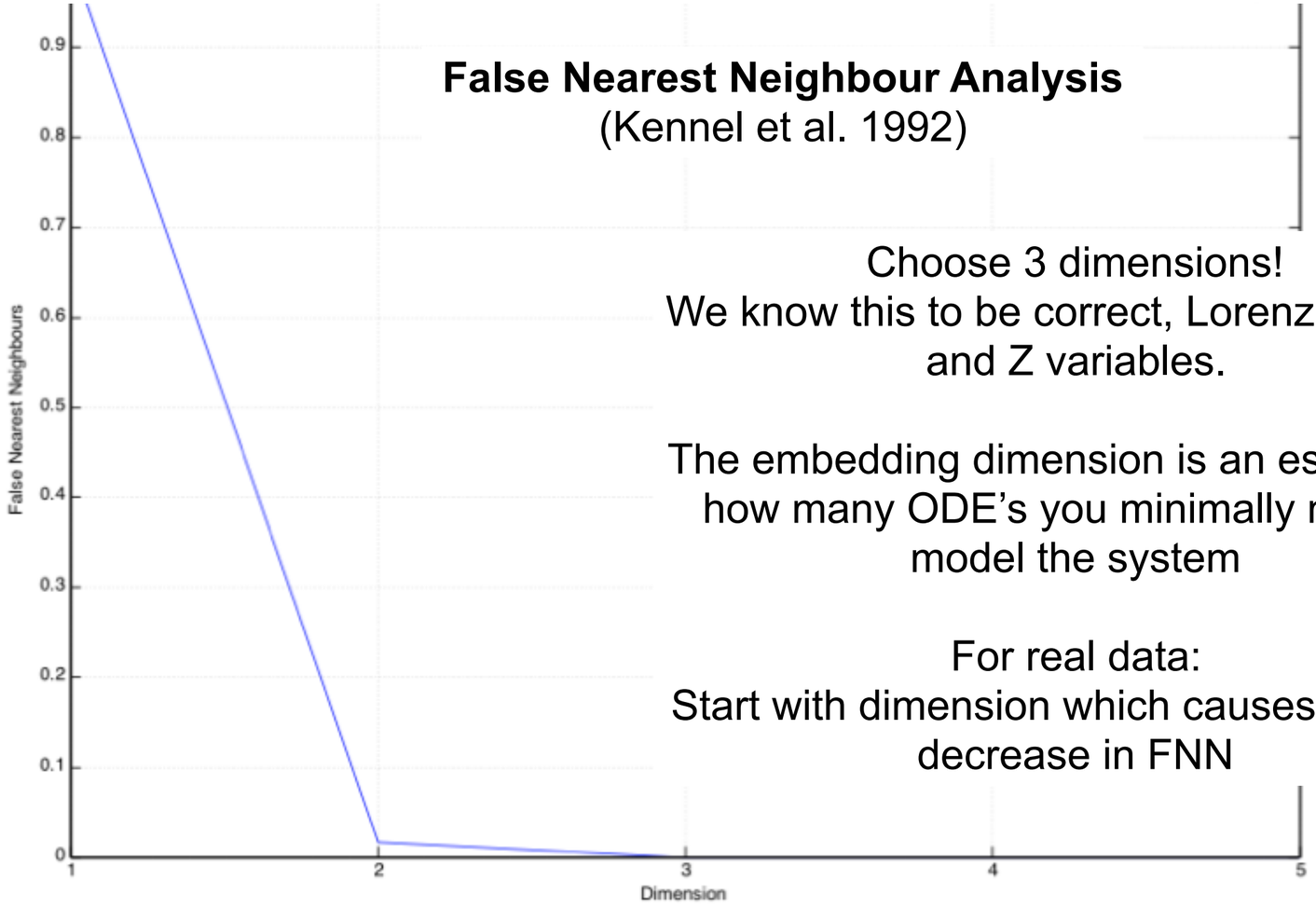
Choose 3 dimensions!
We know this to be correct, Lorenz has X, Y and Z variables.

The embedding dimension is an estimate of how many ODE's you minimally need to model the system

For real data:
Start with dimension which causes greatest decrease in FNN

34

Lorenz system – Determine embedding dimensions



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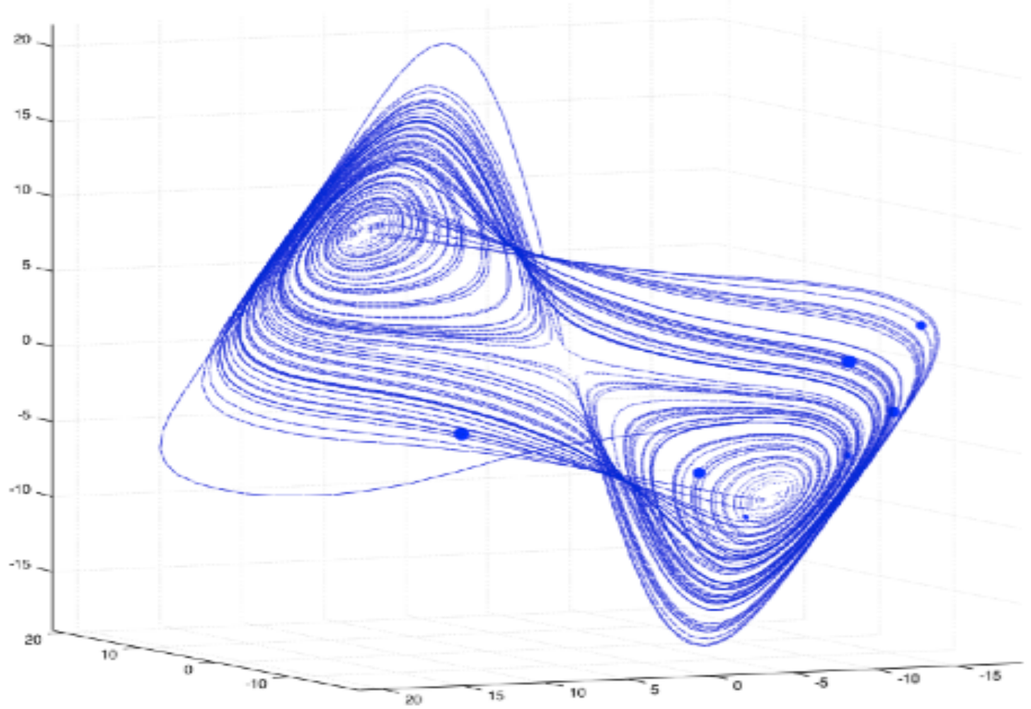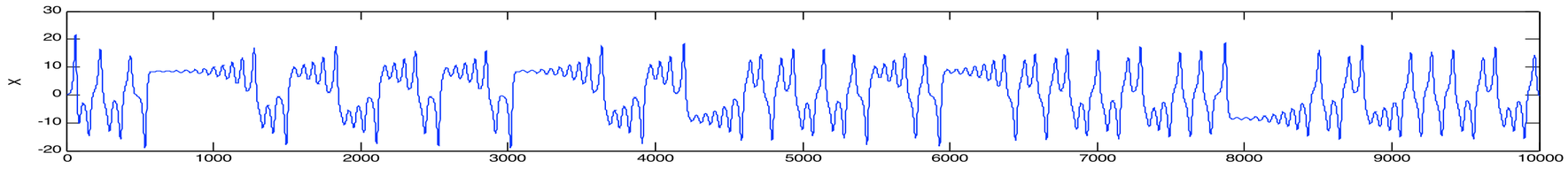
Lorenz system – Reconstruct phase space using X