

## CoE-MaSS weekly seminar series

THE DSI-NRF CENTRE OF EXCELLENCE IN  
MATHEMATICAL AND STATISTICAL SCIENCES (CoE-MaSS)  
PRESENTS A SEMINAR BY

**Dr Manjunath Gandhi**

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University of Pretoria)*

***“The dynamics of ‘forgetting’ and ‘not-  
forgetting’ in evolving systems”***

Friday, 20 September 2019  
10h30-11h30

CoE-MaSS Seminar Room, 1<sup>st</sup> floor, MSB, Wits.

Memory loss in an exogenously driven dynamical system refers to the system asymptotically forgetting its own initial conditions. When this occurs the trajectories of the system seem to merge so that effectively a single trajectory emerges to be a representative of the drive. Memory loss has been exploited for information processing when a design parameter of the dynamical system is close to the threshold that defines a dichotomy between memory loss and no-memory loss. Identifying this threshold has been an unsolved problem since it depends on the exogenous drive as well. The talk concerns finding sufficient and necessary conditions for memory loss thereby identifying the threshold. Applications such as the design of an (echo-state) recurrent neural network and simulation of a brain surgery in an epileptic patient are pointed out.

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