



# Institute Seminar

Friday, 15 May 2015

4:00 p.m.

Fermion

## Title

Looping dynamics of a single flexible chain with internal friction

## Speaker

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## Abstract

In recent past, experiments and simulations have suggested that apart from the solvent friction, friction arising from the protein itself plays an important role in protein folding by affecting the intra-chain loop formation dynamics [1]. This friction is termed as internal friction in the literature. Using a flexible Gaussian chain with internal friction we analyze the intra-chain reconfiguration and loop formation times for all three topology classes namely end-to-end [2], end-to-interior and interior-to-interior.

We also analyze the effect of tail length on the looping dynamics [3]. In addition to that we extend our model to incorporate the effect of denaturant on looping in presence of internal friction [4]. Calculations based on our analytical model matches well with the experimental results.

[1]. B. G. W. Alessandro Borgia, A. Soranno, D. Nettels, M. B. Borgia, A. Hoffmann, S. H. Pfeil, E.A. Lipman, J. Clarke, and B. Schuler, *Nature Commun.* 3, 1195 (2012).

[2]. Samanta and Chakrabarti, *Chem. Phys. Letts.* 582, 71 (2013).

[3]. D. Doucet, A. Roitberg, and S. J. Hagen, *BioPhys. J* 92, 2281 (2007).

[4]. Samanta, Ghosh and Chakrabarti, *AIP Advances* 4, 067102 (2014).

[5]. Samanta and Chakrabarti (to appear in *Physica A*).