Title:	Enhanced logical stochastic resonance under periodic forcing
Authors:	Kohar, Vivek (/jspui/browse?type=author&value=Kohar%2C+Vivek) Sinha, Sudeshna (/jspui/browse?type=author&value=Sinha%2C+Sudeshna)
Keywords:	Stochastic resonance Logical stochastic resonance Noise assisted computation
Issue Date:	2014
Publisher:	Elsevier
Citation:	Communications in Nonlinear Science and Numerical Simulation,19(8), pp.2866-2873.
Abstract:	It was demonstrated recently that noise in an optimal window allows a bistable system to operate reliably as reconfigurable logic gates (Murali et al., 2009) [1], as well as a memory device (Kohar and Sinha, 2012) [11]. Namely, in a range of moderate noise, the system can operate flexibly, both as a NAND/AND/OR/NOR gate and a Set Reset latch. Here we demonstrate how the width of the optimal noise window can be increased by utilizing the constructive interplay of noise and periodic forcing, namely noise in conjunction with a periodic drive yields consistent logic outputs for all noise strengths below a certain threshold. Thus we establish that in scenarios where noise level is below the minimum threshold required for logical stochastic resonance (or stochastic resonance in general), we can add a periodic forcing to obtain the desired effects. Lastly, we also show how periodic forcing reduces the switching time, leading to faster operation of devices and lower latency effects.
Description:	Only IISERM authors are available in the record.
URI:	https://www.sciencedirect.com/science/article/pii/S1007570413005893?via%3Dihub (https://www.sciencedirect.com/science/article/pii/S1007570413005893?via%3Dihub) http://hdl.handle.net/123456789/2902 (http://hdl.handle.net/123456789/2902)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
need to add pdf....odt (/jspui/bitstream/123456789/2902/1/need%20to%20add%20pdf....odt)		8.12 kB	OpenDocument Text	View/Open (/jspui/bitstream/1234

Show full item record (/jspui/handle/123456789/2902?mode=full)
(/jspui/handle/123456789/2902/statistics)