



Department of  
Theoretical Physics

# THE QUANTUM SPACETIME SEMINAR SERIES

## Some revelations of rebellious and queer nature of $\text{NAdS}_2$

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**Time : 11.30 am**

**Venue: A-304, TIFR**



$\text{NAdS}_2$  holography has recently been studied extensively as not only it provides a gravity analogue of maximally chaotic quantum systems but also because it can potentially answer some fundamental questions in quantum gravity. For both purposes, it is necessary to understand time-dependent behavior. We explicitly construct exact time-dependent classical  $\text{NAdS}_2$  solutions involving sources of irrelevant operators with dimensions between 1 and  $3/2$ . We also construct semi-holographic models involving back-reacted source and with total conserved energy. In both cases, we find that  $\text{NAdS}_2$  holographic systems can behave in totally different ways compared to its higher dimensional analogues. Particularly, even in the classical bulk approximation, reversible transfer of energy from bulk to boundary source is possible. We can find the final steady state solution in a large range of semi-holographic coupling. We also argue that even in the classical bulk approximation we will need need to incorporate  $\text{AdS}_2$  fragmentation to make sense of the most general scenario. Our semi-holographic model can have applications in understanding of behavior of di-quarks in quark-gluon plasma.

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