

Geometry, Groups and Dynamics/GEAR Seminar  
(held at the Illinois hub of GEAR )

**1:00 pm Thursday, September 17, 2015 in 243 Altgeld Hall**

Null distance on a spacetime

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Abstract: Given any time function on a spacetime  $M$ , we define an induced 'null distance' function, built from and closely related to the causal structure of  $M$ . This null 'distance' is a conformal pseudometric in general, but is positive-definite under natural conditions. Further, in basic model cases, the causal structure is encoded completely in the resulting metric space. In the cosmological setting, a canonical choice of time function was introduced and studied by Andersson, Galloway, and Howard. We show that under their basic 'niceness' condition, the induced null distance is definite, and hence provides a uniform way of encoding 'big bang' and related spacetimes as metric spaces. This is joint work with Christina Sormani.

No video available.