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Christina Sormani and **Carlos Vega*** (vegaca@slu.edu). *Null distance on a spacetime.*

In this talk, we will discuss a new distance function on spacetime. More specifically, fixing any spacetime M with time function τ , we define a ‘null distance function’ \hat{d}_τ , built from and closely related to the causal structure of M . Indeed, in basic model cases, \hat{d}_τ encodes the causal structure completely. In general, \hat{d}_τ is a conformally invariant pseudometric, which is definite if and only if τ satisfies a natural ‘anti-Lipschitz’ condition. While there is typically no canonical choice for τ , one is offered in the finite-past setting by the ‘cosmological time function’ defined by Andersson, Galloway, and Howard. We show that, under their basic niceness condition, this induces a definite null distance function, and hence provides a uniform way of metrizing spacetimes which emanate from a common initial singularity, e.g., a ‘big bang’. (Received January 18, 2016)