המחלקה למתמטיקה, בן-גוריון

# קולוקוויום

ביום שלישי, 24 באוקטובר, 2017

*בשעה 14:30 – 15:30*

*במ- Math 101*

ההרצאה

## its and flows traversing of Holography problems scattering inverse the to applications

תינתן על-ידי

## (MIT) Katz Gabriel

תקציר: We study the non-vanishing gradient-like vector fields $v$ on smooth compact manfiolds $X$ with boundary. We call such fields traversing. With the help of a generic boundary field $v$, we divide the boundary $\d X$ of $X$ into two complementary compact manfiolds, $\d^+X(v)$ and $\d^-X(v)$. Then we introduce the causality map $C_v: \d^-X(v) \to \d^+X(v)$, a distant relative of the Poincare return map. Let $\mathcal F(v)$ denote the oriented 1-dimensional foliation on $X$, produced by a traversing $v$-flow. Our main result, the Holography Theorem, claims that, for generic boundary traversing vector fields $v$, the knowledge of the causality map $C_v$ allows for a reconstruction of the pair $(X, \mathcal F(v))$, up to a homeomorphism

a for words, other In X$. $\d boundary the on identity the is which X$ \to X $\Phi: a satisfying solutions, their of topology the that show we ODE's, of class massive since "holographic" results these call We rigid. is problem, value boundary given on flow the of dynamics un-parameterized the and $X$ $(n+1)$-dimensional the $n$-dimensional two between $C_v$ correspondence single a by captured are it $\d^-X(v)$. and $\d^+X(v)$ screens,

dynamics the to applications numerous has flows traversing of holography This the of applications some discuss will we permitting, Time flows. general of problems scattering inverse the and flows geodesic the to Theorem Holography boundary. with manfiolds Riemannian on