

# JOINT TUFTS/MIT COSMOLOGY SEMINAR

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## *Ultra-relativistic Soliton Collisions* Mustafa Amin Cambridge

Solitons appear in many physical models, from scalar field theories in the early universe to optical fibres. What happens when solitons collide? I will show that ultra-relativistic collisions are exceptionally simple. For relativistic scalar field theories, I will present a kinematic, perturbative framework which is not restricted to small deviations around integrable cases. Our method works best in the high velocity limit when simulations are most difficult. Based on this framework, I will present the nontrivial leading order results for collisions of  $(1+1)$  dimensional kinks. I will end with some potential applications.

Tuesday, March 4, 2014, 2:30 pm  
Cosman Seminar Room  
Center for Theoretical Physics  
Building 6C, Room 6C-442  
Massachusetts Institute of Technology  
Refreshments at 2:00 in the same room