

Physics Seminar

Wednesday 11/19/2008, 4:30 pm
Science & Engineering Building Auditorium

Jose L Balduz Jr

Physics Department - Mercer University

and in absentia

Brayden A Ware

Physics and Math Major - MIT

Summer Graphity, Three Flavors

Last summer, Brayden was back home in Macon after his freshman year at MIT, looking for some physics research work. We explored the use of simple graphs to describe the discrete fundamental nature of space. The work consisted of three small projects, presented here.

The first project (Metrics on Random Graphs) was a survey of general properties of random graphs, especially their connectivity, diameter and distance distribution.

The second project (Coordinate Fields on Quantum Graphs) used a scheme similar to the Born-Openheimer approximation of molecular physics to uncover interesting (chaotic?) dynamics of a classical scalar field on a quantum graph.

The third project (Evolution of a Graph Universe) simulated the cosmic expansion with evolving graphs. Graph histories were generated by successive deletion of random individual links, whose distribution was governed by an energy function: as the links were deleted, the universe grew in size.

Please join us for light refreshments at 4:15pm outside SEB 203.