



The Friday Thing

Dr. Mitch Pfenning
Physics Department
University of Guelph

Designer Spacetimes and
Super Luminal Travel

Within the last decade, there has been some research on "designer" spacetimes in which various desired characteristics are engineered into the universe. I will give an introduction to three such spacetimes in which it is possible to travel vast distances in extremely small amounts of time without violating Einstein's statement that nothing can locally travel faster than the speed of light. First is the wormhole spacetime that was used in the book and movie "Contact." Secondly, the Alcubierre "warp drive" spacetime which behaves much like its science fiction counterpart in "Star Trek" and finally, the Krasnikov "superluminal subway." All three models require an exotic form of matter which has negative energy densities, and that can only be created by special quantum states. I will then discuss my own research in QFT, the properties of negative energy density states and how that constrains the three spacetimes above.

Date: Friday, February 16, 2001

Place: MacNaughton 222

Time: 12:30 p.m.

Cookies will be served. Don't forget your lunch.

