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ΠΑΡΟΥΣΙΑΣΗ ΠΤΥΧΙΑΚΗΣ ΕΡΓΑΣΙΑΣ
ΣΤΟ ΠΛΑΙΣΙΟ ΤΟΥ ΜΑΘΗΜΑΤΟΣ
«Εισαγωγή στην Ερευνητική Μεθοδολογία»

ΘΕΜΑ: Gravitational collapse in “tilted” spacetimes

ΟΜΙΛΗΤΗΣ: Χρήστος Μουστάκας

ΕΠΙΒΛΕΠΩΝ ΚΑΘΗΓΗΤΗΣ: Χρήστος Τσάγκας

ΗΜΕΡΟΜΗΝΙΑ: Τετάρτη, 9 Οκτωβρίου 2024

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ABSTRACT

Relative motions are everywhere. Daily experience, as well as astronomical and cosmological observations have confirmed the ubiquitous presence of the so-called peculiar motions on all scales in the universe. It is therefore of theoretical and practical interest to explore environments where peculiar flows are also present. In this Thesis, we look into the gravitational collapse of conventional matter with a peculiar-velocity “tilt”, namely we consider matter that moves relative to the idealized reference frame of the collapse. We assume highly relativistic peculiar velocities, but also impose a number of simplifying constraints due to the extreme mathematical complexity of the problem. The aim is to investigate theoretically whether the aforementioned velocity tilt is capable of preventing the focusing of the material particles and thus the formation of the singularity. Our study takes the first step in this direction, by employing a simple, “toy-like”, model.

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