

UNIVERSITY OF CRETE
DEPARTMENTS OF MATHEMATICS AND APPLIED MATHEMATICS

ANALYSIS SEMINAR

11:15am, Thursday, 24 Jan 2019
Room A-303

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Computation of the acceleration in the uniform circular motion

In physics circular motion is a movement of an object along the circumference of a circle or rotation along a circular path. It can be uniform, with constant angular rate of rotation and constant speed, or non-uniform with a changing rate of rotation. The rotation around a fixed axis of a three-dimensional body involves circular motion of its parts. The equations of motion describe the movement of the center of mass of a body. Examples of circular motion include: an artificial satellite orbiting the Earth at a constant height, a ceiling fan's blades rotating around a hub, a stone which is tied to a rope and is being swung in circles, a car turning through a curve in a race track, an electron moving perpendicular to a uniform magnetic field, and a gear turning inside a mechanism. Since the object's velocity vector is constantly changing direction, the moving object is undergoing acceleration by a centripetal in the direction of the center of rotation. Without this acceleration, the object would move in a straight line, according to Newton's laws of motion. In this talk we derive the formula of acceleration of the uniform circular motion using direct computation (the argument seems to be not widely known). The talk will be targeted towards undergraduate and graduate students.