



# APPLIED MATHEMATICS SEMINAR

## Mannheim Curves in Three-Dimensional Walker Manifolds

by

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**Abstract:** In this talk we introduce Walker Manifolds' theory, discuss some of their features, as well as study a specific type of curves called Mannheim curves. After establishing the basics like the Walker manifold's definition and Walker coordinates, we give the Walker metric and the Walker cross-product. We calculate the Christoffel symbols and introduce the covariant derivative. Then, we obtain the curvature  $\kappa$  and the torsion  $\tau$  for special cases of a three-dimensional strict Walker manifold. Furthermore, we define Mannheim curves and present a variety of their characteristics in  $E^3$ . Finally, we derive the same results but for the case when the underlying manifold is a Walker manifold.

**Date:** Monday, June 5, 2023

**Time:** 17:00-18:00, GMT+3

**Place:** ZOOM

To request the event link, please send a message to [yheydarzade@bilkent.edu.tr](mailto:yheydarzade@bilkent.edu.tr).