SEMINAR
SCHOOL OF MATHEMATICS AND STATISTICS

DATE: 3 DECEMBER 2018

TITLE

The group of distance preserving automorphisms of R^n

VENUE | TIME

Seminar Room I
03:45 P.M.– 04:45 P.M.

SPEAKER

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ABSTRACT

A theorem Euler says that any displacement of a rigid body in R^3 is the composition of a translation followed by a rotation. This can be generalized to all dimensions as follows: Let $A \subset R^n$ be a subset with non-void interior and $a \in A$ an interior point. Let $F : ([0,1] \times A^n$ be a continuous map such that $F(0,p) = p$ for all $p \in A$ and $d(F(t,p), F(t,q)) = d(p,q)$ for all p, q in A and $t \in [0,1]$. Then there are continuous maps $a : [0,1]^n$ and $L : [0,1](n,R)$ such that $a(0) = a$, $a(t) = F(t,a)$ for all $t \in [0,1]$, $L(t)$ is a linear automorphism of determinant 1 preserving the inner product on R^n. We will discuss general facts about the orthogonal group, the group of automorphisms of R^n preserving distance between points and give a proof of the above generalization of Euler's theorem.