**Speaker: Mostafa Esfehanizadeh**

**Title:** Coarse index of multi partitioned manifolds

**Abstract:** In this session I will speak about an index theorem for complete Riemannian manifolds which are partitioned by several hypersurfaces. These hypersurfaces are assumed to intersect each other transversally and excisive and the intersection of these hypersurfaces is assumed to be compact. Using these geometric data we construct a morphism between the K-theory of the coarse $C^*$-algebra of the underlying manifold and the $K$-theory of the coefficient $C^*$-algebra. We prove that the image, under this morphism, of the coarse index of a Dirac type operator on the underlying manifolds equals the Fredholm index of the induced Dirac operator on the intersection manifold. We apply this theorem to get a result on non-existence of complete metrics with positive scalar curvature when the intersection manifold in enlargeable.