- **Dave, Shantanu: Index of geometric hypoelliptic operators**
  Many geometric operators such as the BGG turn out to be (maximally) hypoelliptic. These operators arise from filtered manifold in natural way. So you have them on foliations, contact manifolds, Engel manifolds, flag manifolds, parabolic geometries.... Can one learn more about these geometries using hypoelliptic operators? It would be natural to expect that the index of these operators encodes some geometrically significant information.In this talk I will introduce the analysis of geometric hypoelliptic (Rockland) operators including their heat kernel asymptotics and provide examples and implications.