**Optical Inspection of Niobium SRF Cavities**

**Introduction**

Optical inspection of niobium SRF cavities have very important applications, particularly in particle accelerator machines, due to their high Q-factors and the good mechanical properties of niobium. The International Linear Collider will require a very high performance of the cavities. Development of new automated inspection techniques is a key issue to produce consistent high-quality cavities which can live up to the theoretical potential. The inspection techniques used for these machines are limited by quantum noise. Most research is being done to understand the causes of these phenomena and develop methods of eliminating them. Cropma and CLASS at Cornell University are developing fabrication techniques and procedures to reduce the number of defects in the cavities.