

Physics Colloquium

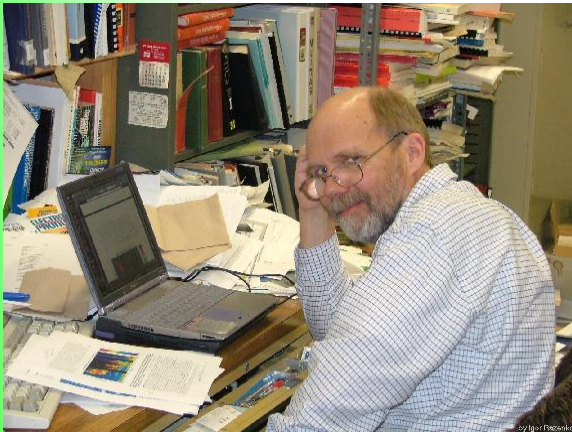
Michigan Technological University

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4:00 PM Fisher Hall 139

High Spectral Resolution Lidar--Physics at Work in the Atmospheric Sciences

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Lidar, the optical equivalent of radar, is able to detect aerosol layers and tenuous clouds that are invisible to radar, yet play an important role in studies of climate, air pollution and the visibility of targets. Conventional aerosol lidars provide vivid images of aerosol and cloud structure.

However they are unable to provide quantitative measurements of either extinction or scattering cross section. Attenuation and backscatter terms are multiplied together in the lidar equation--there is insufficient information to separate them without the use of poorly supported assumptions. High Spectral Resolution Lidar avoids this problem by separating particulate scattering from molecular scatter and then using molecular scattering for calibration. The High Spectral Resolution Lidar technique will be described--the instrument uses principles and technologies more familiar to physicists than atmospheric scientists.