

Department of Physics and Astronomy Colloquium



Prof. Luis Vidal Ponce Cabrera
National Polytechnic Institute of Mexico

Date: February 1, 2017

Time: 12:10 p.m. (**Refreshments** in **Rm. 103 @ 12:00 p.m.**)

Place: Rm. 103, Thirkield Hall, Howard University

Host: Prof. Prabhakar Misra

Laser ablation for thorn removal in Opuntia Cactus: Solving a “Thorny Problem”

Abstract: The Opuntia cactus, a staple consumed in Mexico, dates back to antiquity and its production and marketing has reached many countries due to its great nutritional, organoleptic, and medicinal properties. Its consumption requires a de-thorning process, where an operator either manually or mechanically de-thorns the cladode’s surface by means of a blade. This process results in product damage, with volume losses up to 30% and a shorter shelf life that prevents storing and marketing the de-thorned product. The National Polytechnic Institute of Mexico, in collaboration with Havana University, has developed a laser technology that de-thorns Opuntia cacti and allows thorn removal by laser ablation. This approach results in a de-thorning process without product damage, thus eliminating losses and increasing shelf life. Different techniques such as Laser Induced Breakdown Spectroscopy, Photoacoustic and Optical Reflectance, were used for on-line monitoring of the ablation process.