



# PHYSICS AND ASTRONOMY COLLOQUIUM

**Dr. Cornelia Hoehr**

TRIUMF & UVic

## “How Nuclear Physics Can Diagnose and Treat Cancer”

### Abstract

Cancer affects about 50% of people in western countries and is the cause of death for 25% of the population. The three approaches of treating cancer are surgical removal, chemotherapy or radiotherapy. Physics and especially nuclear physics has always played a direct and indirect role in medicine as very early on scientists realized the potential of radiation treatment in medicine. TRIUMF, Canada's National Laboratory for Particle and Nuclear Physics, provides tools for cancer diagnostics in the form of radioactive isotopes used in Positron Emission Tomography (PET). These PET tracers allow one to find and stage the cancer and to monitor its response to treatment. If the cancer does not react to the prescribed treatment as expected, the treatment will be changed or extended and adapted to the specific case. This approach is applying personalized medicine, where not one approach fits all but the treatment is being tailored to the individual patient, with more successful outcomes. TRIUMF also operates Canada's only Proton Therapy centre. Ocular cancer patients have been treated here since 1995. Cancer treatment with protons takes full advantage of their superior dose deposition versus the traditional treatment with high energy photons. This allows the healthy tissue around the tumor to be spared from excessive harm while destroying the cancer cells, resulting in a very successful cancer treatment.

Wednesday, September 10, 2014

3:30 p.m.

Bob Wright Centre

Room A104