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The Physics of Proton Therapy

One of the most significant developments in medical physics in the last few years is **proton therapy**. Rather than irradiating a tumor with a beam of **x-rays**, a beam of **protons** is used instead. One fundamental advantage of protons is that most of their energy is deposited deep in the body where they come to rest, rather than throughout their entire path (an effect called the **Bragg Peak**), making it easier to kill a tumor while sparing the surrounding healthy tissue. But there is still much that is unknown about how protons interact with the body. Visiting Assistant Professor **Eugene Surdutovich**, of the **Department of Physics**, recently published a study examining the role of **electrons** knocked free by the protons (called **secondary electrons**) during proton therapy. His paper (**Spectra of Secondary Electrons Generated in Water by Energetic Ions**, **Physical Review**, Volume 81, Article number 021903, 2010), written in collaboration with researchers from the **Frankfurt Institute of Advanced Study** in Germany, provides new insight into the physics of ion-beam cancer therapy.

SUMMARY

Created by Brad Roth (roth@oakland.edu) on Saturday, February 13, 2010
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