



Contribution ID: 4

Type: **not specified**

Scintillation Detectors - Basic Introduction

Monday 1 July 2024 14:00 (45 minutes)

Scintillation Detectors - Basic Introduction

Rastislav Hodak

Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic

Abstract

The detection of ionizing particles or radiation using scintillation light produced in certain materials belongs to one of the oldest techniques in the field of radiation detection. Despite its long history, this technique remains one of the most versatile and widely used methods for detecting and performing spectroscopy on a broad range of radiations, from alpha particles to gamma rays.

This lecture will provide a general introduction to scintillating detectors, covering the fundamental physical principles that underpin their operation. We will delve into the key properties that make scintillators effective, such as their light yield, decay time, and spectral emission characteristics. Various types of scintillators will be discussed, including organic and inorganic scintillators, highlighting their specific advantages and typical applications.

Additionally, the lecture will explore the application of scintillating detectors in particle physics, demonstrating how they are employed in experiments to detect and measure different types of radiation. Through this exploration, students will gain a universal understanding of the critical role that scintillating detectors play in modern radiation detection and measurement technologies.

BIO

Mgr. Rastislav Hodak, PhD.

Institute of Experimental and Applied Physics

Czech Technical University in Prague

Husova 240/5

11000 Prague

Czech Republic

rastislav.hodak@cvut.cz

Experimental Physicist

Leader of a group "Neutrino & Underground Laboratory LSM"

Appointments

Jan. 2024 –today Postdoctoral researcher (part-time)

Faculty of Nuclear Sciences and Physical Engineering, CTU in Prague, CR

May 2023 –Dec. 2023 Postdoctoral researcher

Nuclear Physics Institute of the Czech Academy of Sciences, CR

April 2013 –today Postdoctoral researcher

Institute of Experimental and Applied Physics, CTU in Prague, CR

Jan. 2013 –March 2013 Postdoctoral researcher

FMPI, Comenius University in Bratislava, Slovakia

Education

Oct. 2008 –Nov. 2012 FMPI, Comenius University in Bratislava, Slovakia

Ph.D. degree in Nuclear and Subnuclear Physics

Title of dissertation: "Charge-exchange reactions in context of massive neutrinos in nuclear processes"

Sept. 2003 –June 2008 FMPI, Comenius University in Bratislava, Slovakia

Master's degree in Nuclear and Subnuclear Physics

Training department: Institute of Physics, Slovak Academy of Sciences, Slovakia

Presenter: Dr HODAK, Rastislav (Czech Technical University in Prague (CZ))