Contribution ID: **63** Type: **Oral**

Predictive Impurity Profiling in Germanium Crystals through Machine Learning and Hall Effect Measurements

Wednesday, May 15, 2024 4:45 PM (25 minutes)

This abstract introduces Hall effect measurements for evaluating Germanium crystal properties and proposes using machine learning to improve accuracy amidst challenges like equipment failures and sample fluctuations. It focuses on high-purity Germanium for rare event detection. Traditional methods for assessing impurity levels are limited, prompting the exploration of machine learning. The study aims to optimize predictive models using parameters like mobility, resistivity, and impurity concentration, evaluating various machine learning models. It suggests future research directions for enhancing predictive capabilities.

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Session Classification: Advanced Data Analysis

Track Classification: Advanced Data Analysis