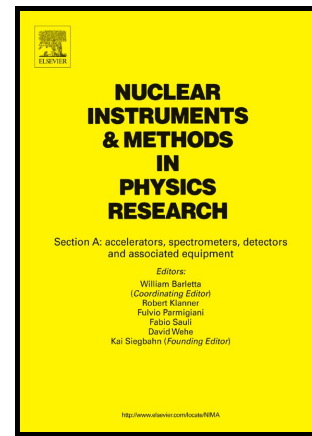


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# “PVC Extrusion Development and Production for the NOvA Neutrino Experiment”

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## Abstract

We have produced large and highly-reflective open-cell PVC extrusions for the NOvA neutrino oscillation experiment. The extrusions were sealed, instrumented, assembled into self-supporting detector blocks, and filled with liquid scintillator. Each Far Detector block stands 15.7 m high, is 15.7 m wide and 2.1 m thick. More than 22,000 extrusions were produced with high dimensional tolerance and robust mechanical strength. This paper provides an overview of the NOvA Far Detector, describes the preparation of the custom PVC powder, and the making of the extrusions. Quality control was a key element in the production and is described in detail.

Keywords: Neutrino Detector, PVC, plastic, extrusions

Keywords: PVC; plastic; extrusions; neutrino detector

## 1. Introduction

### 1.1 Overview

The NOvA experiment is designed to search for the appearance, via neutrino oscillation, of electron-neutrinos in Fermilab’s NuMI Muon-neutrino beam [1][2]. Two liquid scintillator-based

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