



**BERKELEY LAB**

Bringing Science Solutions to the World



U.S. DEPARTMENT OF  
**ENERGY**

# RD53 Module QC Update

**A. Dimitrievska, M. Garcia-Sciveres, T. Heim,  
L. Osojnak, S. Pagan Griso, E. Pianori, E. Resseguie**  
**Lawrence Berkeley National Laboratory**

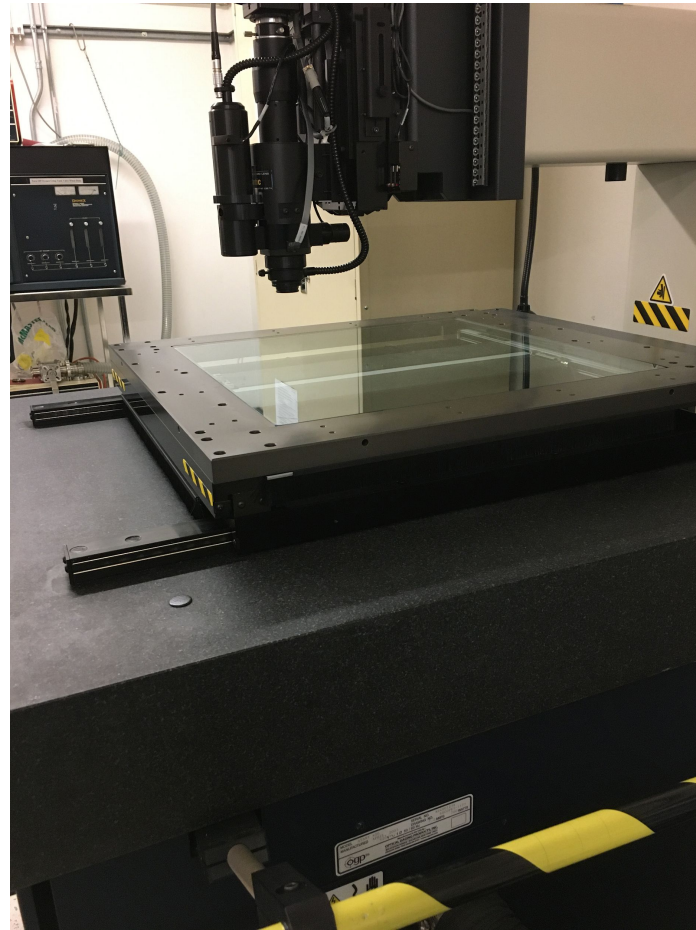
**March 13, 2020**

**Student Instrumentation Meeting**

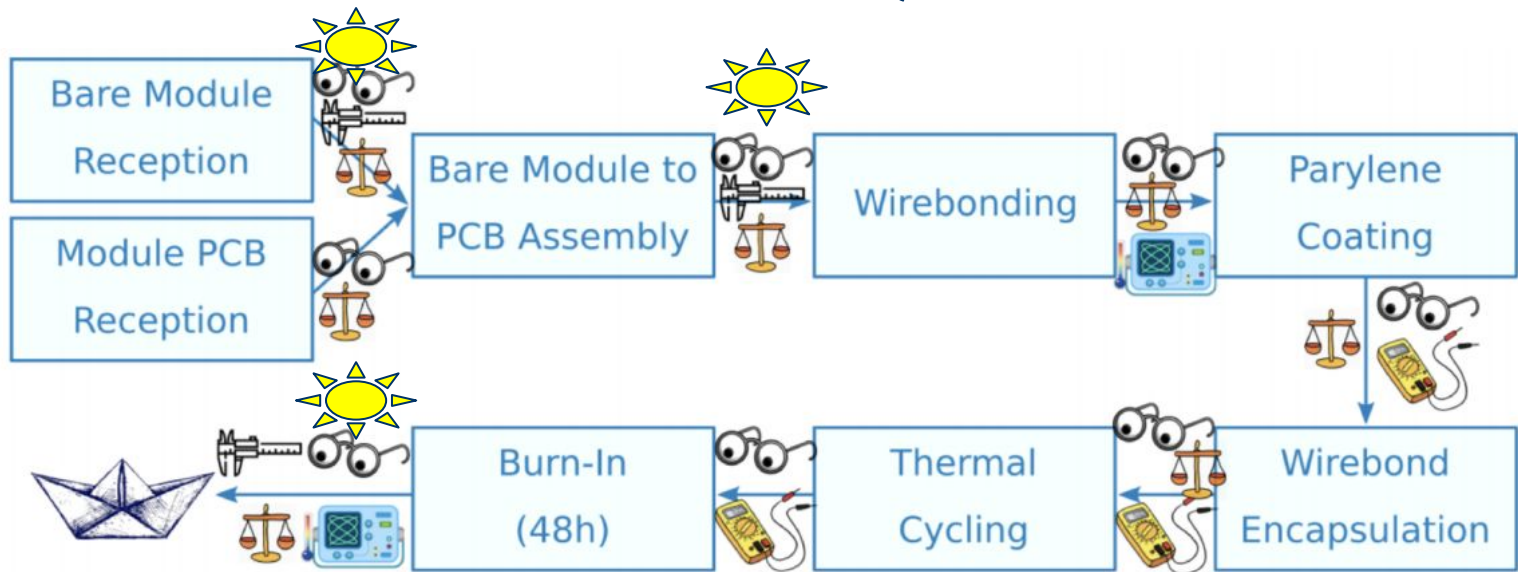
# Introduction

- QC for pixel modules in development
- SmartScope for metrology
- Cooling Unit design and assembly

# SmartScope in clean room



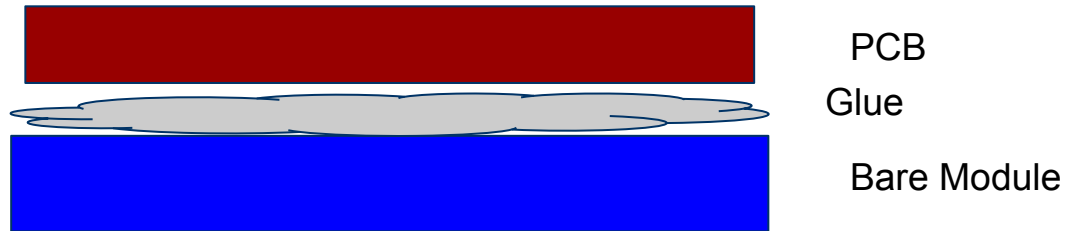
# How this will be used in QC:



**Legend**

- Visual Inspection
- Weighing
- Metrology
- Basic Electrical Test
- Different Temperatures
- Full Electrical Test
- Shipping

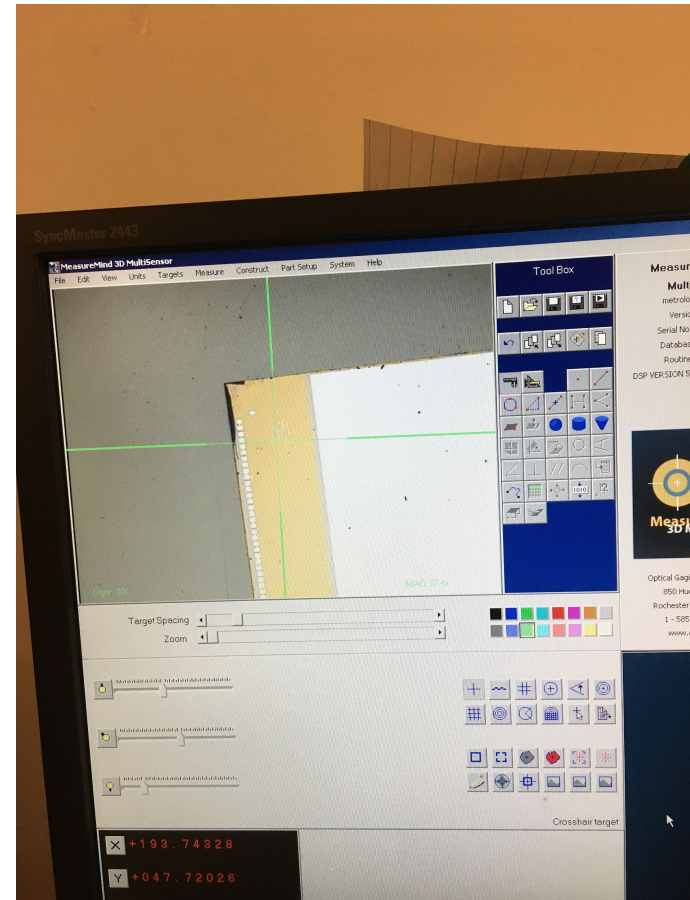
# Module Assembly



# Dummy Quad Module on SmartScope

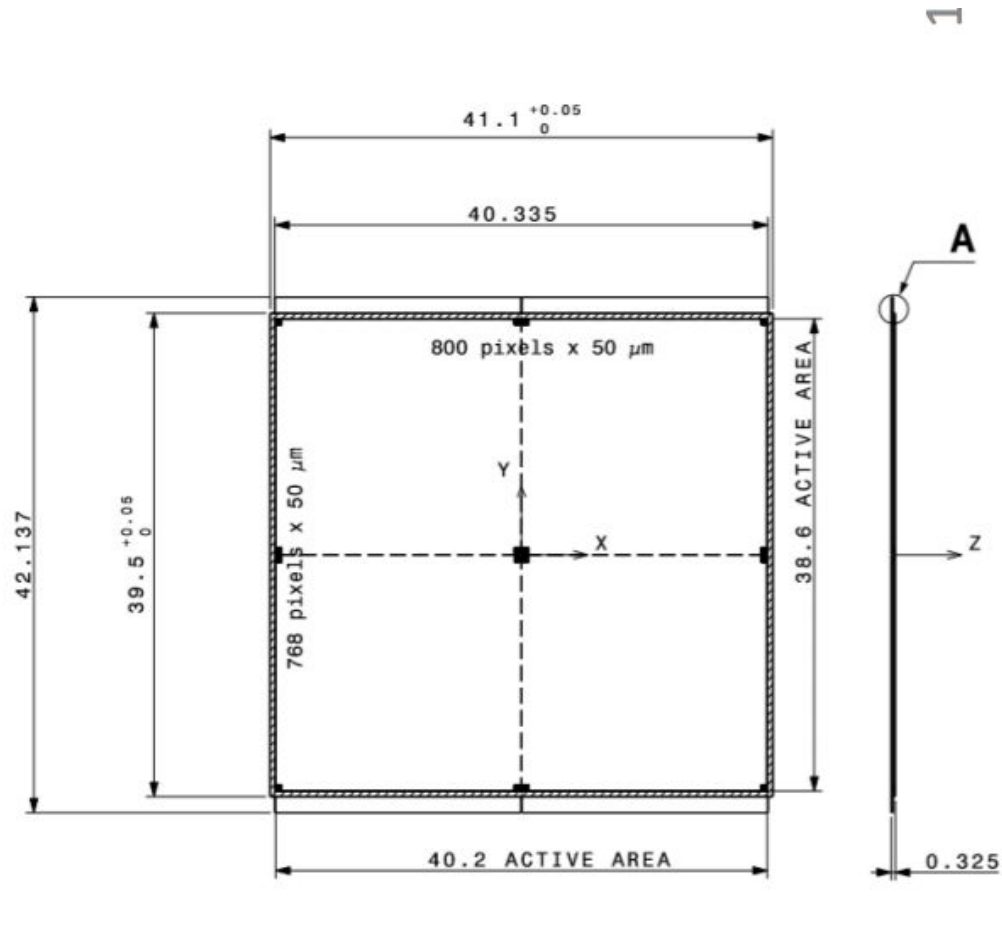


This module height = 327.0 micrometers





# Module Specification Dimensions



# Measurements of Bare Module

SIDE ONE

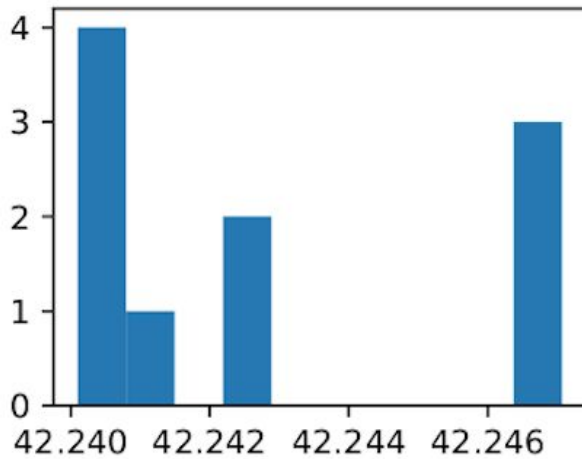


SIDE THREE

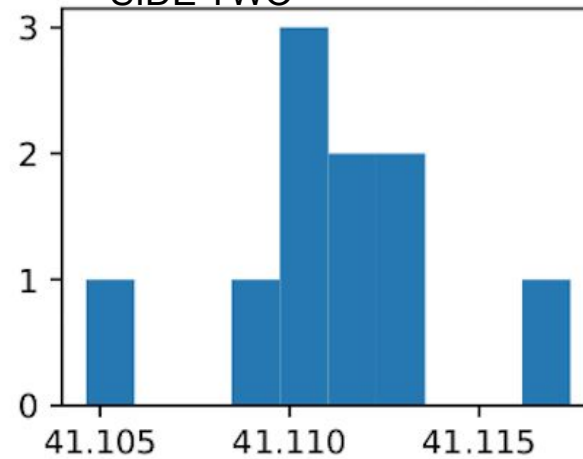


# “Precision” of Dimensions

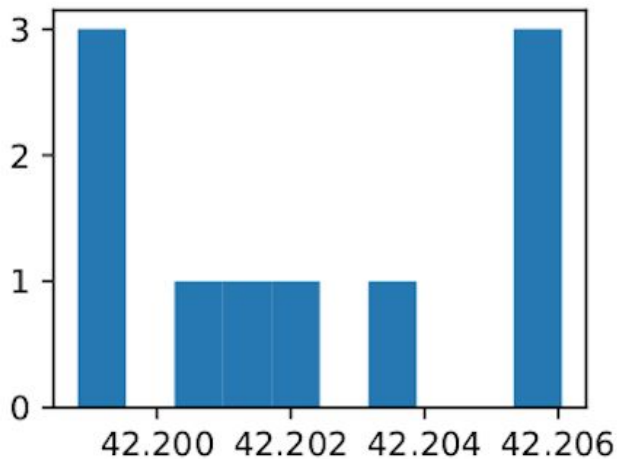
SIDE ONE



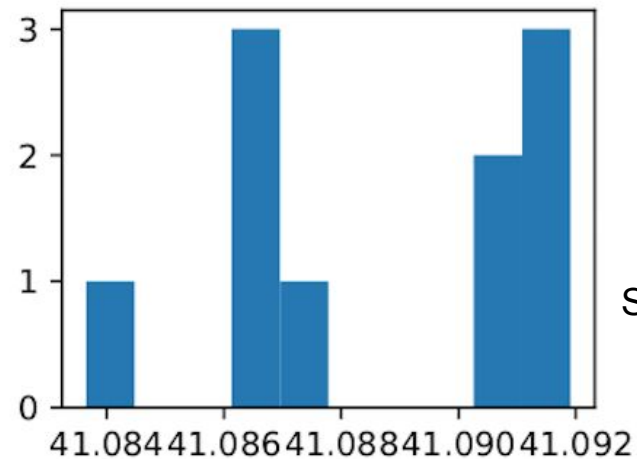
SIDE TWO



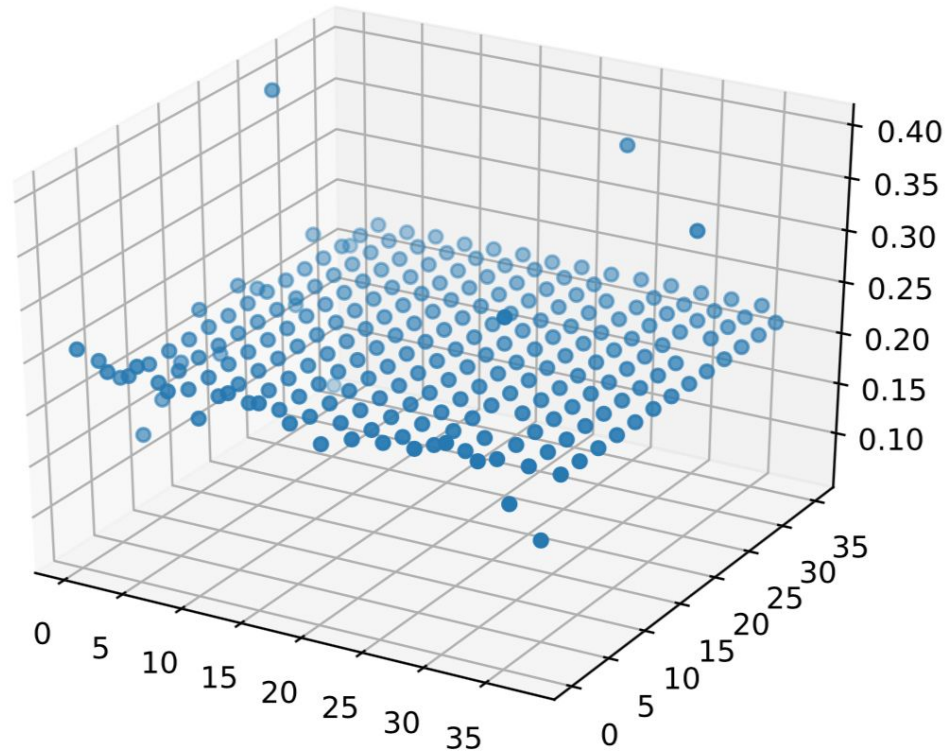
SIDE THREE



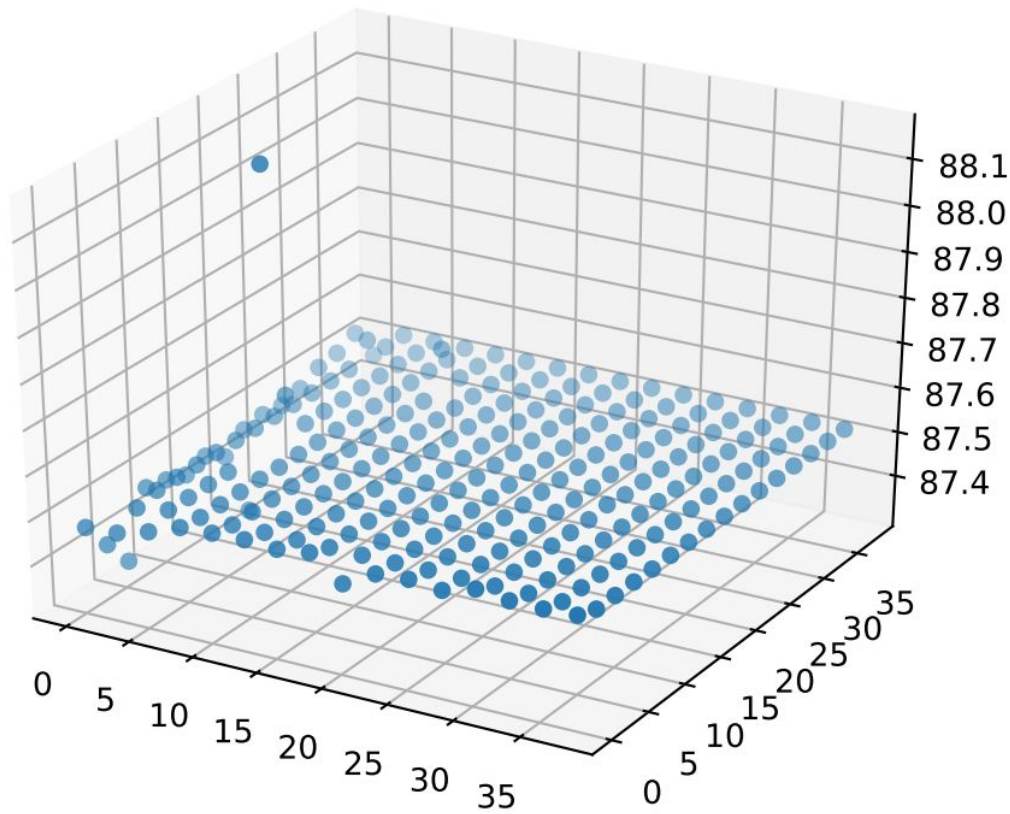
SIDE FOUR



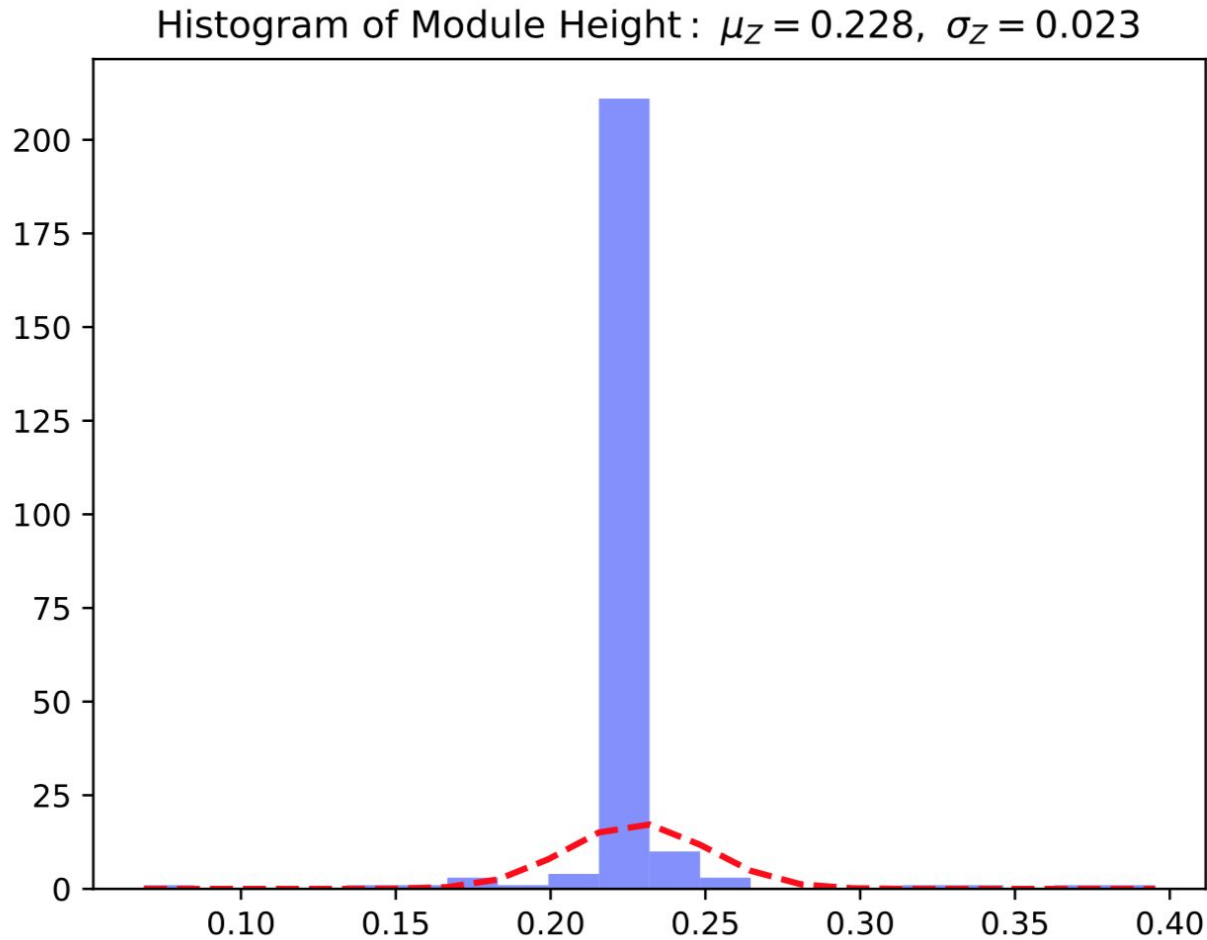
# Using the Table as Z origin



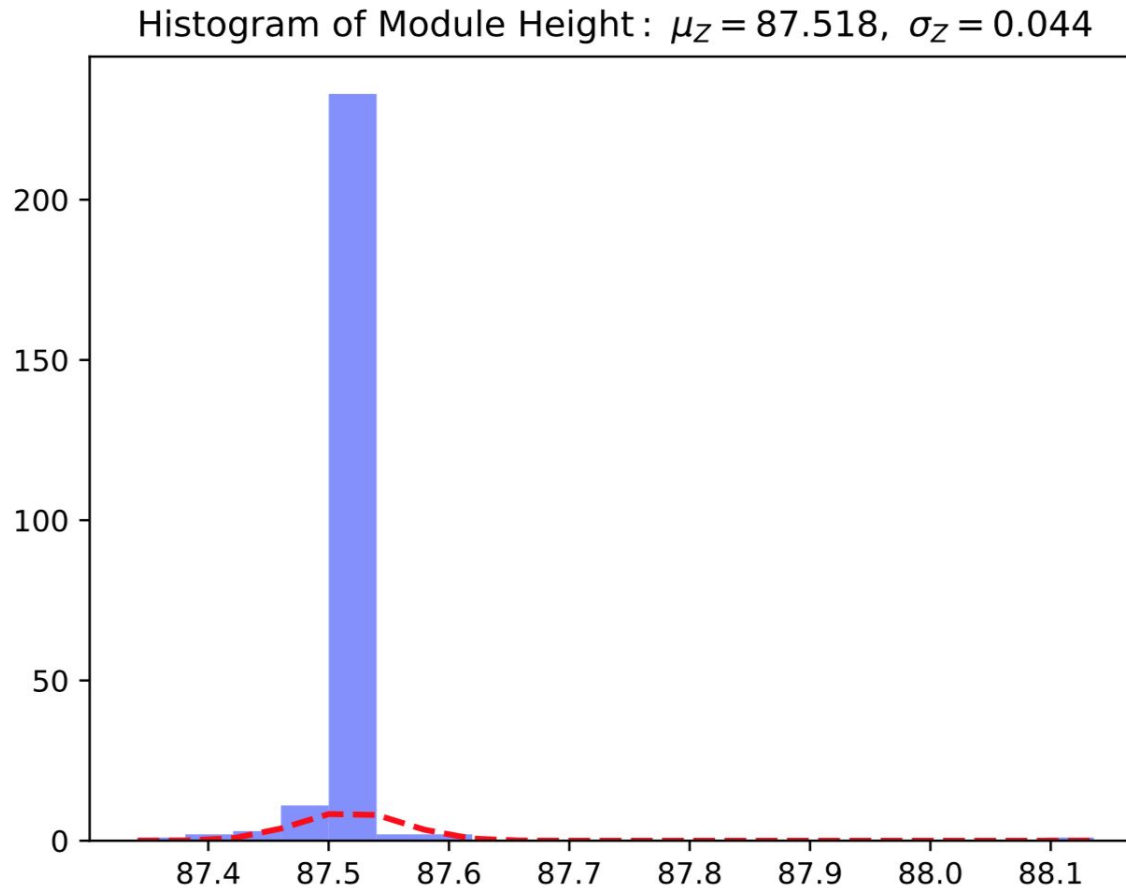
# Measuring Z with respect to the bottom left edge



# Z Measurement Precision from Table



# Z Precision from bottom left edge



# Issues/ What comes Next

- SmartScope does not focus on shiny surface of bare module
- How to zero the Z axis for calibration?
- Micrometer for measurements of Z once we have thoroughly measured the surface once with the SmartScope