

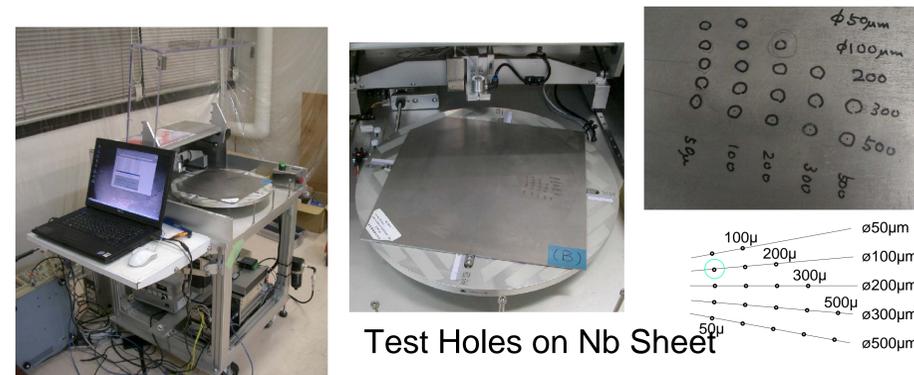
# Updates on R&D of Nondestructive Inspection Systems for SRF Cavities

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## INTRODUCTION

We are developing high resolution eddy current scan and High density T-map and X-map. The high resolution eddy current scan showed 100  $\mu\text{m}$  diameter hole with 50  $\mu\text{m}$  depth that was drilled on a Nb plate. The surface mount print circuit technology is applied to the high density T-map and X-map devices, which will be ready soon to test at a vertical test bench. In addition, radiography using Xrays and neutrons are also under study. The results and status will be presented.

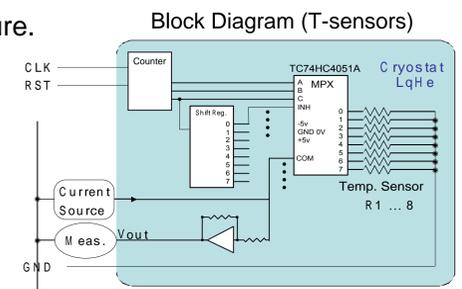
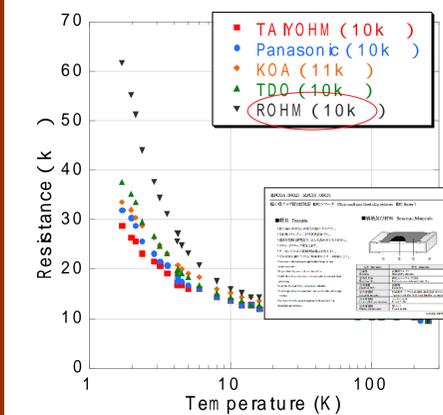
## HIGH RESOLUTION EDDY CURRENT SCAN



Test Holes on Nb Sheet

## HIGH DENSITY T-MAP & X-MAP

Resistances as functions of temperature. The input current is 5 $\mu\text{A}$ .

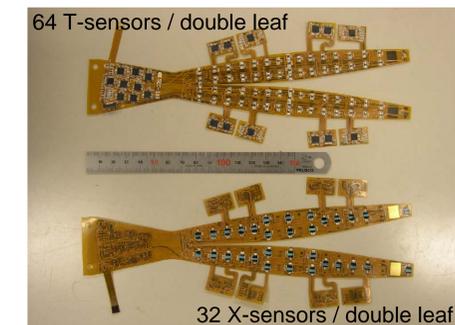


Installation

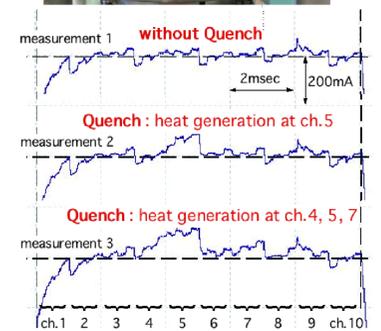


1024 T-sensors + 512 X-sensors / Cell 10 lines/cell

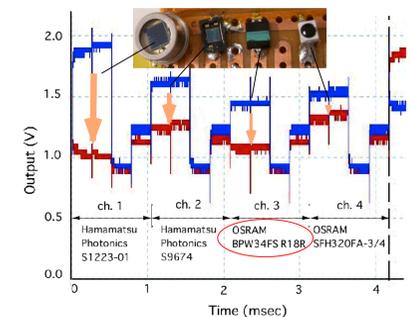
## XT-map PCB



10 k resistor responses at quench

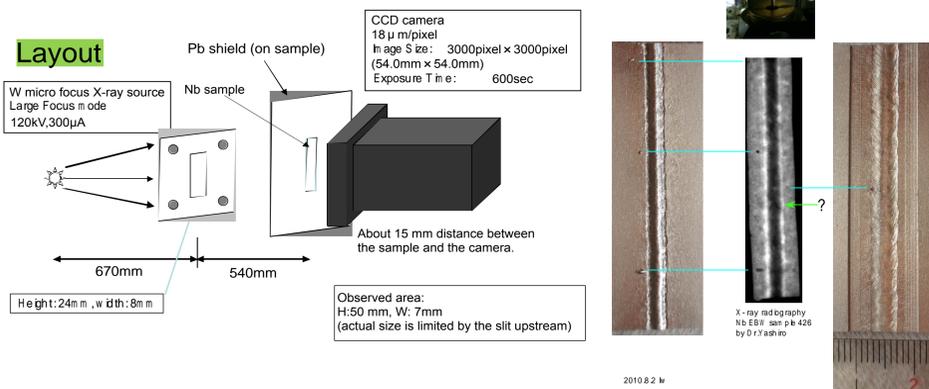


Photodiode responses at quench

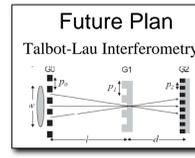
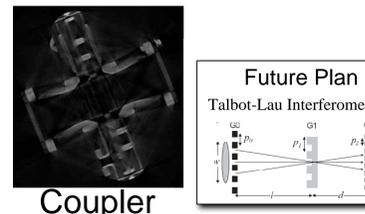
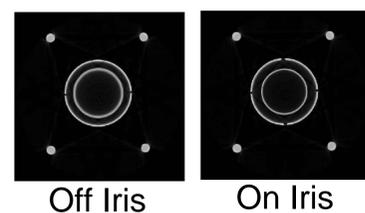


## X-RAY, NEUTRON INSPECTION EFFORT

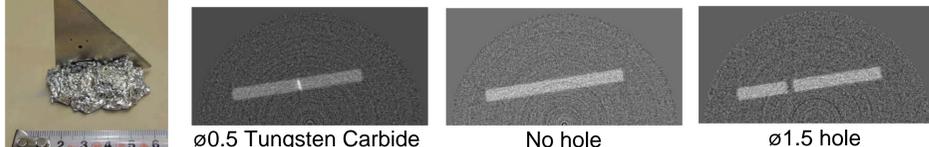
### X-ray transmission imaging



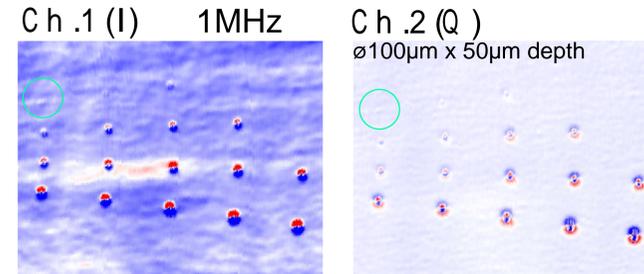
### X-ray CT imaging



### neutron CT imaging

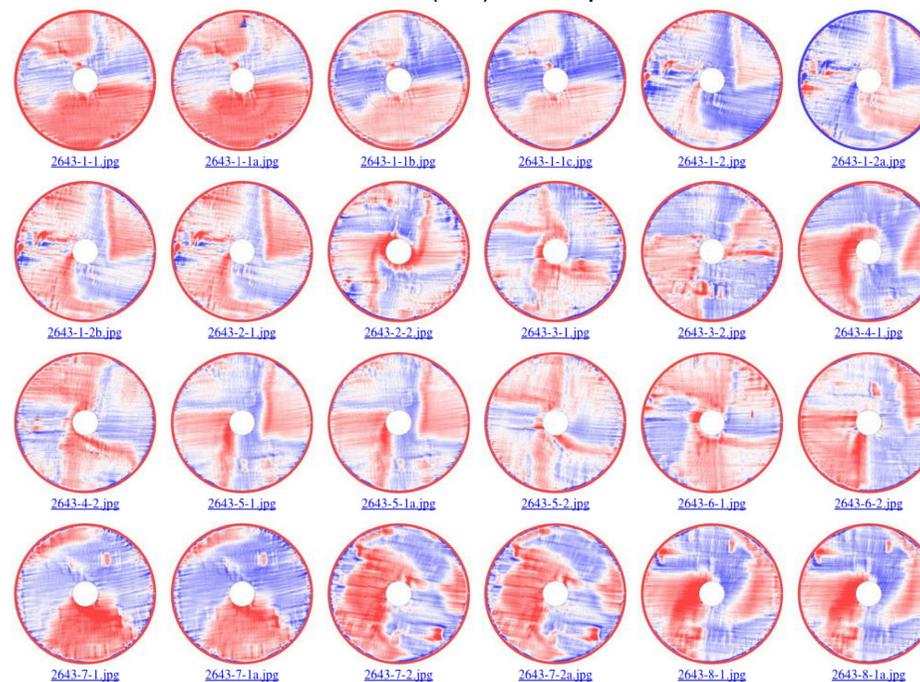


## ASWAN JSAID-3X200



Differential probe 0.3x0.25mm with sharp tip

## Test (old) Examples



## Vertical Test at STF/KEK

