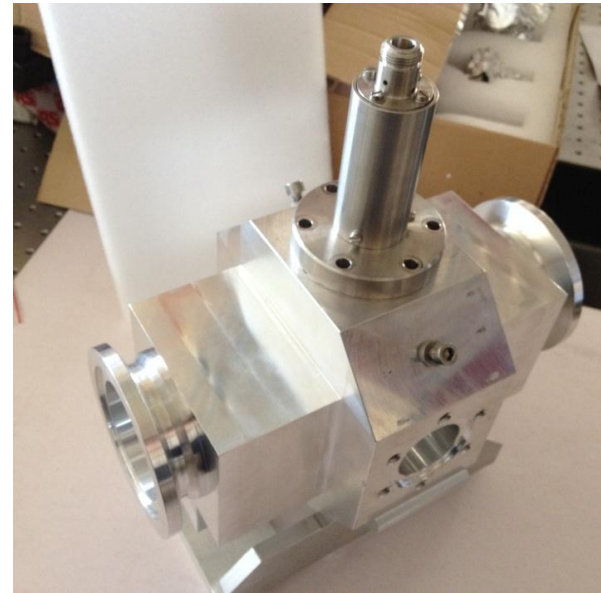# FETS BPM Testing

- Two BPMs from CERN now at RHUL – strip-line and button types
- Preliminary tests using a basic wire (no wire rig) will start this week
- Once completed the BPMs will be characterised using a wire test rig (currently under construction)
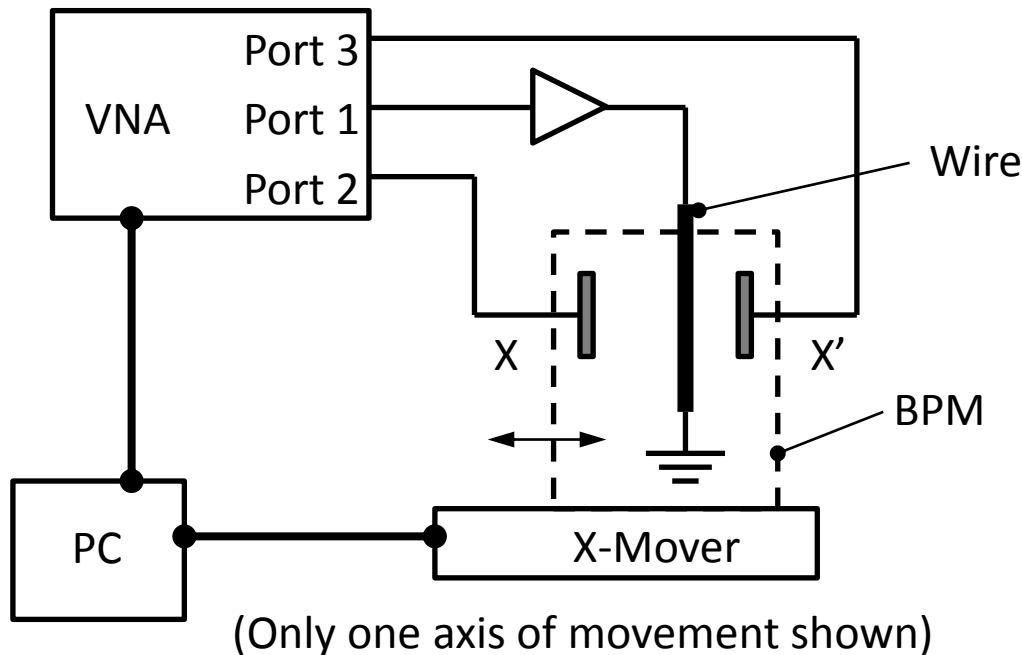

CERN strip-line BPM

CERN button BPM
(only one button in position)

FETS BPM Wire Rig

For the BPM characterisation using the wire rig:

- A VNA will be used to inject a signal along a wire, with the signal from opposing electrodes recorded with a PC
- Software will be written to control the wire movement in two axes and to record data from the VNA

(Only one axis of movement shown)

FETS BPM Characterisation

BPM characterisation required:

$$Position_x = k_x * \frac{V_{right} - V_{left}}{V_{right} + V_{left}} \quad Position_y = k_y * \frac{V_{up} - V_{down}}{V_{up} + V_{down}}$$

- Determine constants k_x and k_y using wire rig
- Test front-end electronics using VNA (simulated electrode signals and LO)
- Test electronics on wire rig with output from electrodes

Once the electronics test is completed the output from the BPM electrodes will be digitised and processed using the digitiser/FPGA to determine beam (wire) position