Performance evaluation and development of silicon strip detector for the J-PARC E16 experiment The 4th J-PARC Symposium 2024 R. Yamada^A, K. Aoki^B, Y. Yorito^A, K. Ozawa^B, T. Takahashi^c Hiroshima Univ. ^A, KEK^B, RCNP^C



Chamber plates with copper cooling water pipes built in for FEB cooling The chamber is covered with aluminized mylar and black sheets

The interaction rate using a 30 GeV, 1×10^{10} pps beam is as high as 10 MHz

First installed at the 4th commissioning Run (Run-0d: June 2023)



 \rightarrow Firmware modification to serialize data in GBTxEMU and decode and reduce data before GERI

3. Recording of E16 trigger information

The online trigger selection system was implemented in April 2024 (firmware development). The Run Oe data-taking is conducted with this system.

4. Test experiment with electron beam @KEK PF-AR

- The test experiment was conducted at KEK's PF-AR test beamline in November 2023 (1) Test the E16 STS DAQ using a beam Purpose
 - **(2)** Evaluation sensor performance



> Efficiency > Time resolution Result Hit profile 0deg 108N **99.85** +/- 0.03 % Sensor_tdc – Scinti_tdc **99.77** +/- 0.02 % 16deg 108N Hit profile $\sigma = 1.53$ [tick] 1tick (Odeg 108 N-side) = 4.8 [nsec] = 3.125ns *Efficiency w/ TDC cut was very low

5. E16 Commissioning run (Run-0e)

- E16 5th commissioning run (Run-0e) was conducted in May 2024
- The first data collection with online trigger matching (implemented) in STS

