

Construction status of the INTT silicon tracker for sPHENIX at RHIC

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The sPHENX experiment¹⁾ at RHIC in Brookhaven National Laboratory (BNL) will be launched in January, 2023. The sPHENIX detector complex has been already in the construction phase in the experimental site at RHIC. The refurbished Barbar magnet was mounted on the outermost detector, *i.e.* hadron calorimeter in October, 2021 as shown in Fig. 1.

Japanese collaborators are in charge of development and construction of the silicon strip detector, namely INTermediate Tracker (INTT). Major components of the INTT detector have been developed and fabricated domestically, and the mass production of silicon ladder components (*i.e.* silicon sensors, high density interconnect (HDI) readout cables, and carbon fiber cooling plates) have been completed by the end of December, 2021. These components have been exported to the ladder assembly sites in BNL and Taiwan, and 70% of the ladder assembly have been completed by January, 2022. Shown in Fig. 2 is the mock-up of a quarter portion of the INTT inner layer barrel assembled in BNL. The construction of the INTT barrel will be started in Spring, 2022 and completed by early Summer, to be ready for the installation to the experimental site in September.



Fig. 1. The Babar magnet assembly on the bottom portion of the outermost detector, *i.e.* hadron calorimeters.



Fig. 2. The mock-up of a quarter portion of the INTT inner layer barrel assembled in BNL.

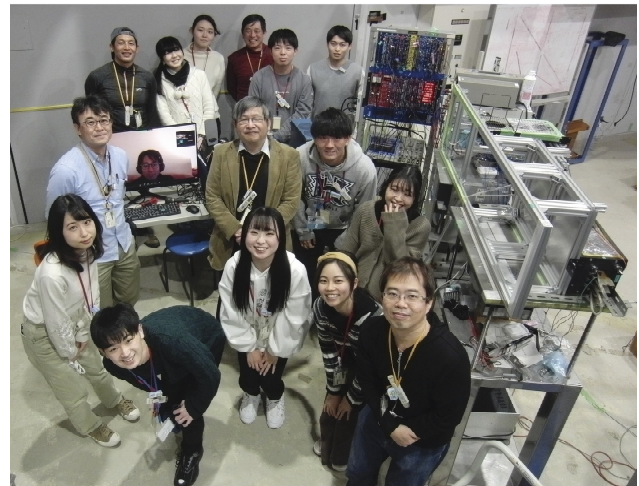


Fig. 3. The collaboration photo of the beam test at Tohoku University.

The readout cable chain of the INTT ladder consisted of the HDI, a bus extender,²⁾ and a conversion cable. While the bus extender is under mass production, the conversion cable under development employing the micro-coaxial cable technology. In December, 2021 we executed 3rd beam test³⁾ of the INTT ladder telescopes in Tohoku University.

References

- 1) Conceptual Design Report of sPHENIX (2018).
- 2) T. Hachiya *et al.*, in this report and references therein.
- 3) G. Nukazuka *et al.*, in this report and references therein.

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