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# Development of robust beam window by additive manufacturing

*Thursday 5 June 2025 15:30 (2 hours)*

Construction of the COMET experimental facility is underway to explore the muon-electron conversion process at the J-PARC Hadron facility. An 8 GeV proton beam supplied from the main ring irradiates a target in a superconducting capture solenoid magnet, and the produced pions and muons are transported to the experimental area. In the beam line, the muon transport solenoids are composed of superconducting magnets cooled by liquid Helium (LHe). The beam windows should be robust enough to withstand against rapid and high pressure increase in emergency of LHe quenching until rupture disks break. Simultaneously, the density of the beam window material must be low, and the thickness must be as thin as possible, while minimizing the beam energy loss for high transmission efficiency. Therefore, we have been developing a beam window built by additive manufacturing. We have successfully developed a beam window made of Ti-6Al-4V with a diameter of 269 mm, a thickness of 0.5 mm, and a proof pressure of 30 atm, and have now started development of a beam window made of AlSi10Mg.
In this presentation, we will report on the development status of the beam window by additive manufacturing.

## Footnotes

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