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## Testing and Integration of the Service Cylinders for the CMS Phase 1 Pixel

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In this talk we present the design, assembly and integration of the service cylinders for the barrel pixel detector. Furthermore, we present results of the testing and calibrations carried out with a set of Phase 1 detector modules.

### Summary

At the end of this year, the present 3-layer CMS pixel detector will be replaced with a new 4-layer pixel system to maintain the excellent tracking performance of CMS at the upcoming higher luminosity conditions at the LHC. The addition of an extra layer, closer to the beam pipe, demands a complete redesign of its services. The barrel pixel detector is attached to four supply tube half cylinders which carry the services along the beam pipe, accommodate the cooling lines and house the electronics for detector readout and control. The supply tubes are a complex system in design as well as in production due to the large number of channels and tight space requirements. In this talk we present the design of the system and discuss the assembly and integration of the barrel pixel supply tubes. Furthermore, we present results of the testing and calibrations carried out with a set of Phase 1 detector modules.

**Primary authors:** NGADIUBA, Jennifer (Universitaet Zuerich (CH)); CAMINADA, Lea Michaela (Universitaet Zuerich (CH))

**Presenter:** NGADIUBA, Jennifer (Universitaet Zuerich (CH))

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