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## **Dilution cryostats for experiments with the Frozen Spin polarized Target at particle accelerators.**

*Monday, 6 June 2022 12:00 (10 minutes)*

Nuclear-spin polarized targets play a key role in experimental nuclear and particle physics. They are essential for understanding how the proton and neutron get their spins from their constituent quarks and gluons and for measuring the electromagnetic structure of these nucleons. The principle of operation of the Frozen Spin polarized Target is based on a long nuclear spin relaxation time at low temperatures (less than 50 mK) and moderate magnetic fields (more than 0.3 T). After a polarization build-up with the Dynamic Nuclear Polarization process, microwave power is turned off and polarization is "frozen in" at a temperature of less than 50 mK and a magnetic field of about 0.3 T, so the spin relaxation time can be many hundreds of hours. To achieve such low temperatures dilution cryostats are used. This report will describe the design, construction and recent results of the horizontal cryostat for the new Bonn Frozen Spin Target, which is being developed for spin physics experiments with tagged photons from the Bonn electron accelerator "ELSA".

### **Summary**

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**Session Classification:** Sectional talks