



Quantum Sensing for Low Mass Particle Dark Matter Searches

- Establish cryogenic (sub-Kelvin) underground research lab in Japan.
 - Kamioka is a possible location
- Deploy demonstrator DM searches using novel sensors to push limits of low threshold
 - Needed to extend DM search mass range well below the proton mass
 - Collaboration with SPICE-HeRALD experiments under development to achieve first science results in a few years
- Basic QIS measurements also. For example decoherence mechanisms studies thanks to ultra-low background



Next Generation Pixel Readout for Colliders

Jointly with
Daniela Bortoletto



- Open a new chapter for RD53 collaboration
- Move to 28nm CMOS technology
 - Enable <100ps per pixel timing
 - Enable higher bandwidth readout (needed to readout out timing data in addition to what is done today)
- Interface to novel sensors
 - Collaborate with sensor development efforts

