Radiation monitoring at SuperB

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At SVD1/SVD2 we have learned a lesson that reliable monitoring of the total accumulated dose and instantaneous dose is needed for safe and optimal Belle operation

•Feedback for tuning of accelerator parameters

•Beam abort in case of extremely high beam background

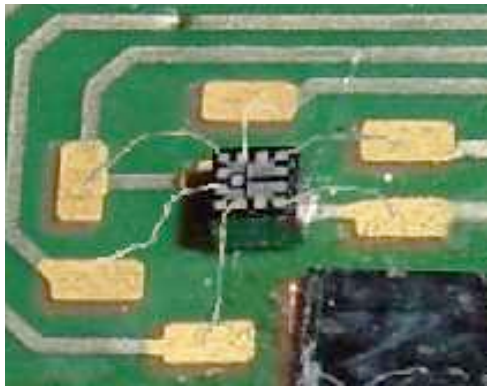
We need the same kind of reliability for SuperB.

➢RadFET sensors for accumulated dose:

-Tested up to 20 kGy, reliable

- Small, easy to read out

- Availability of bare chips?



➢pCVD Diamond sensors for instantaneous dose:

- Developed by A. Gorišek et al. at J. Stefan (Ljubljana) for ATLAS Beam Condition Monitor

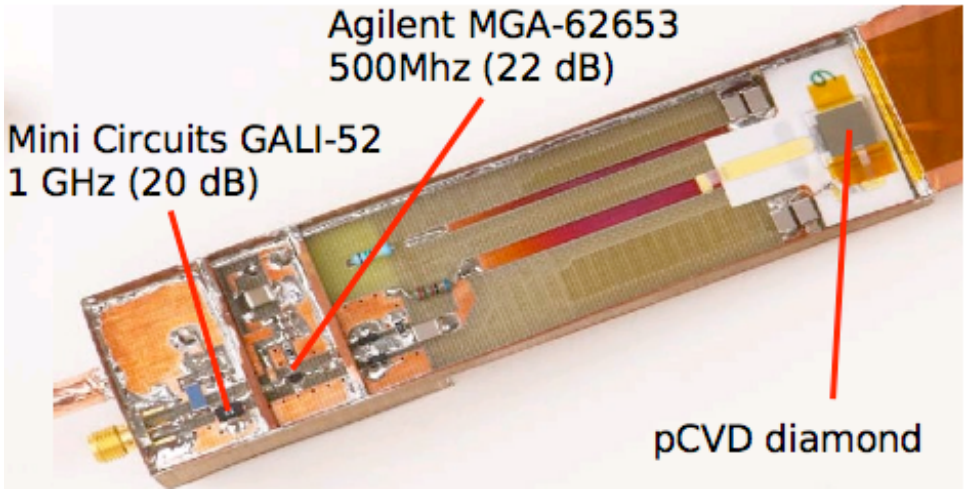
- Not so small (10x10 mm^2, contact 8x8mm^2, 500μm thick)

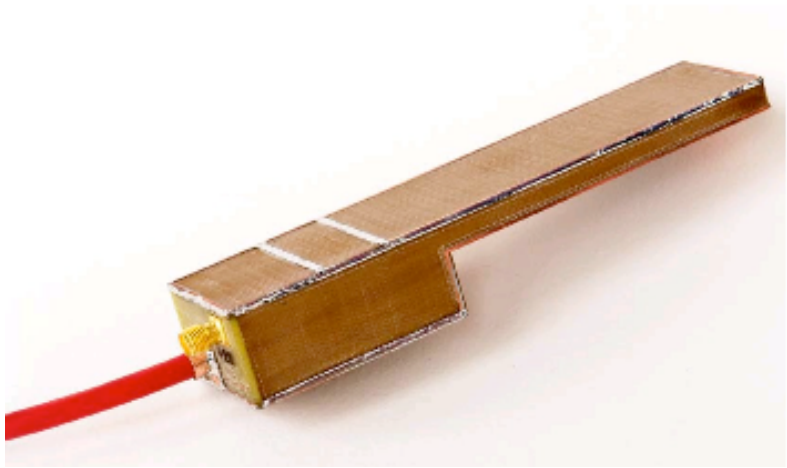
- Shown to withstand > 10^{15} p/cm^2 (iradiated w. p, n and γ)

- Very Low leakage current after irradiation

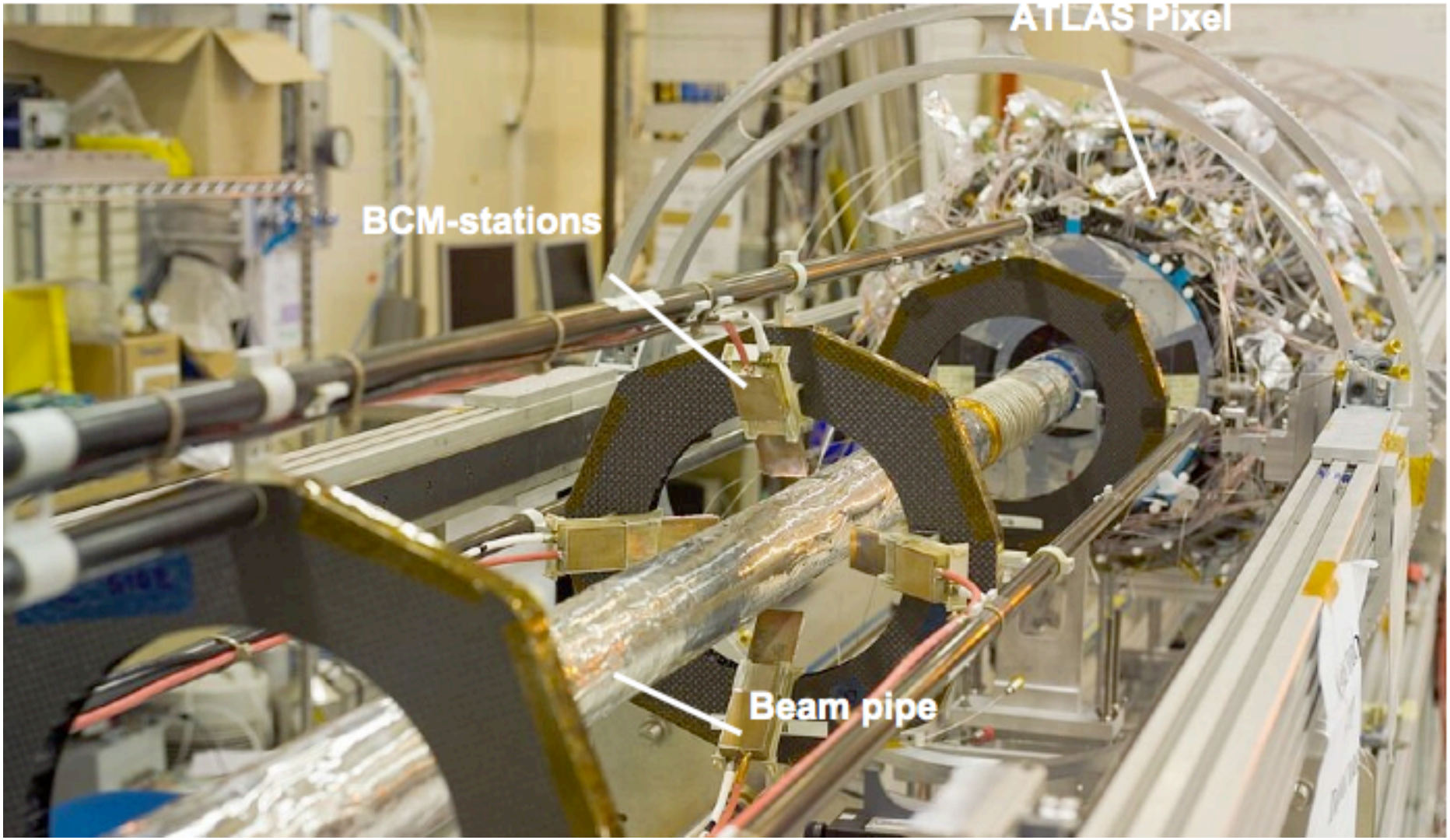
- Does not require detector cooling

Need to be smaller or a new installation concept is needed for SuperB





BPM in ATLAS



Future Plans

1. Investigate the availability of bare RadFET & Diamond sensors
2. Study of RadFET aplicability up to 400 kGy, diamonds are tested to comply
3. Study of mechanical compatibility with SuperB SVD design
4. Define the positions of temperature sensors (electronics, support, beampipe)