

HAICU phase 0 Control System

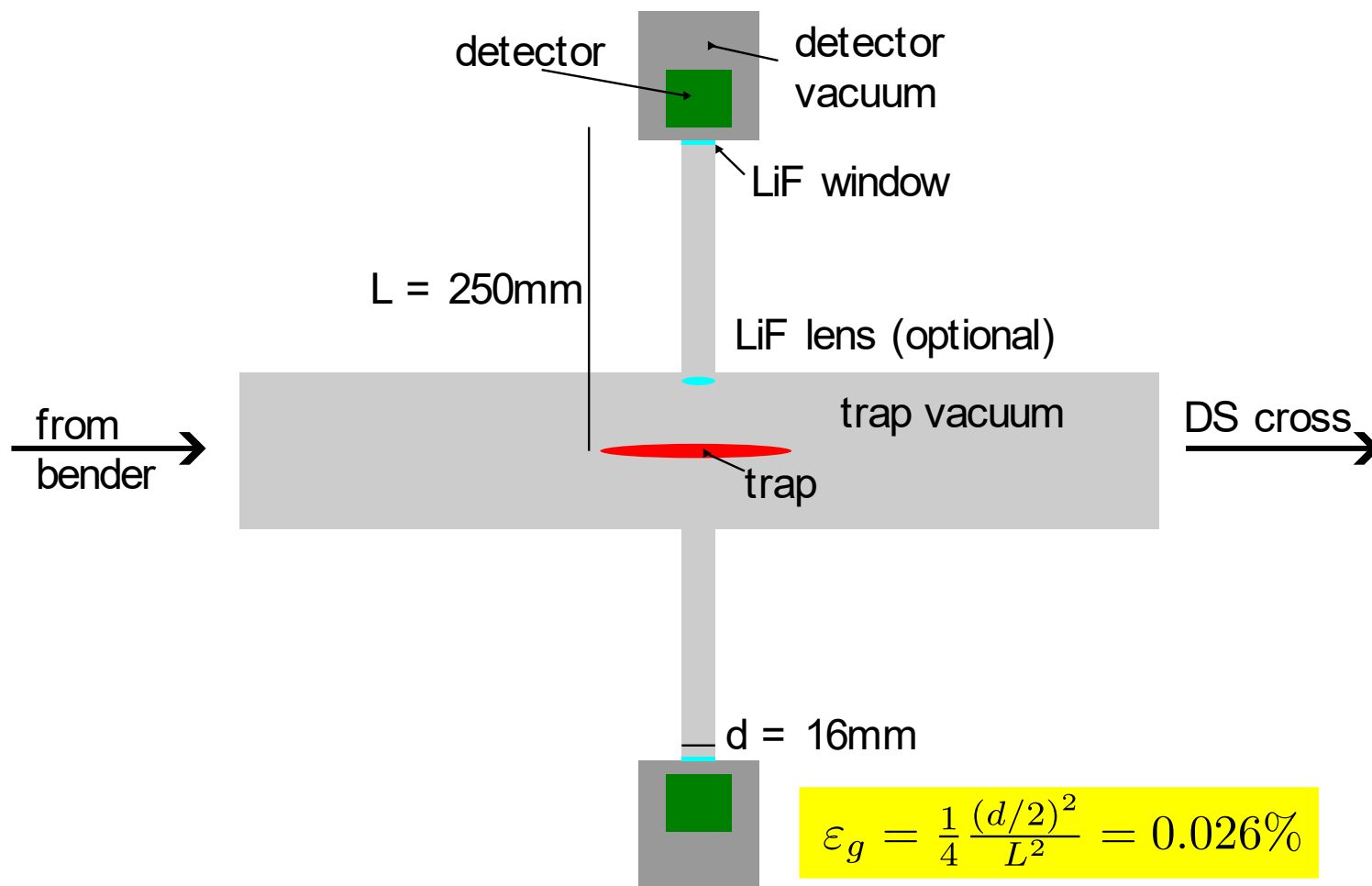
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22 December 2023

1st HAICU collaboration meeting (TRIUMF)

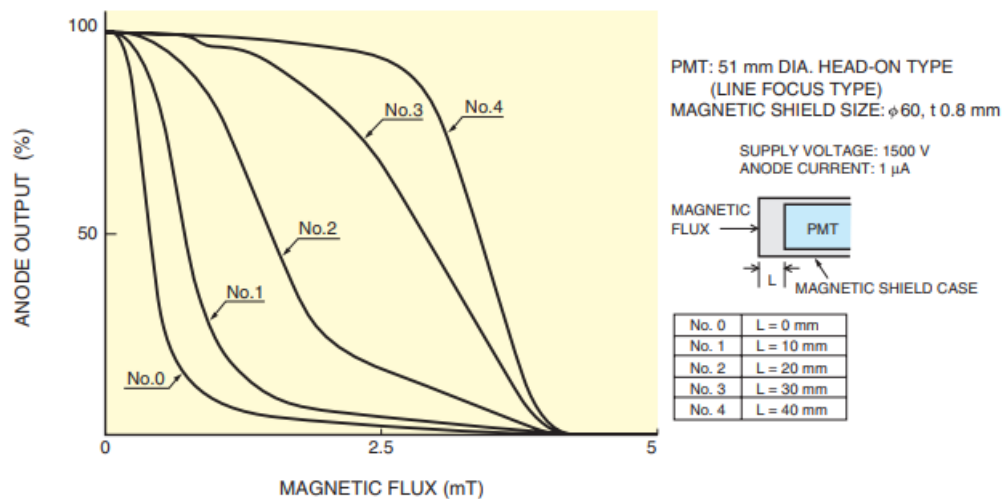
Detectors

Geometry (elog/general:68, elog/general:82)

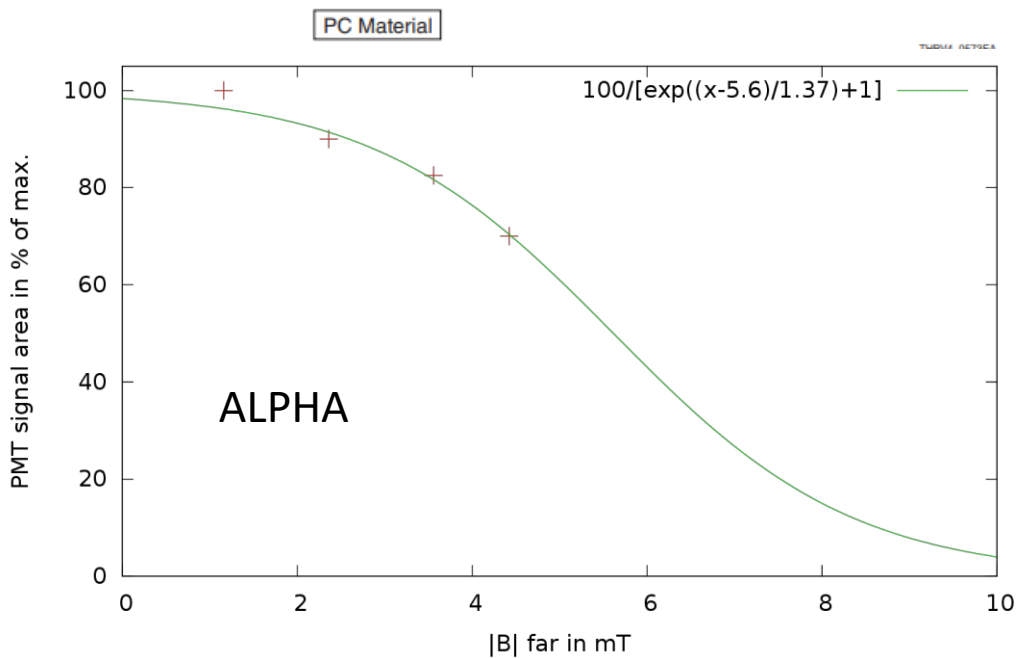


- 2 of 4 perpendicular ports available
- Additional space downstream, but even worse geometric efficiency
- Lens could increase geometric efficiency x100
- LiF transmission ~50%

PMT B-field tolerance (elog/Detectors:6)



- Different dynode geometries have different sensitivity
- Depends on B-field direction
- Double shield may help, but is bulky and not off-the-shelf
- Expected field at detector location TBD



PMT vs SiPM

PMT

- Well understood, experience
- Cooling only needed for single photon detection
- Bulky
- Need mu-metal shield
- Sensitive to B-field
- Quantum efficiency 1-25% (model-dependent)

SiPM

- Require cooling (e.g. -40C)
- Dark count w/o cooling ~MHz
- Small package
- B-field tolerant
- Quantum efficiency ~10%
- Elog/general:7