CLIC ACCELERATING STRUCTURES

- Average gradient 100 MV/m (150 MV/m achieved)
- High frequency, room temperature, travelling wave structures

Total number of accelerating structures in future CLIC – 140,000!
Current limitation is RF BREAKDOWN
(max. rate for CLIC <10⁻⁷ bd/pulse/m)

CERN 12 GHZ TEST STAND
(X-BOX 1)

Most effective way to collect high statistic data on BD physics

**RF TESTS PLANNED:**

- Conditioning of the structures
- Measurement of the breakdown rates at different power levels
- Measurement of dark current and light emissions directly relevant to breakdown physics
- Measurement of dynamic vacuum due to breakdowns and dark currents

**STRUCTURE UNDER TEST**

PEPPER-POT/COLLIMATOR CHAMBER

- 5 mm tungsten plate on a stepper motor controlled linear actuator
- Two separated patterns can be used for collimation
- Fully retractable
- Electrically isolated to use as a Faraday cup

SPECTROMETER FOR DARK AND BREAKDOWN CURRENTS

Spatial and energy distributions of the emitted electrons?

Idea: pepper-pot with an external magnetic spectrometer

Fast (single shot) measurement of the dark and BD currents phase-space together with energy determination

**DIPOLE MAGNET**

- 100x50x5 mm YAG:Ce screen on a stepper motor controlled linear actuator
- 30 degrees angle w.r.t. the beam axis
- Fully retractable
- Optical line to the 2M pixel, 50fps camera

READOUT CHAMBER

**ENERGY RESOLUTION WITH SLIT**

- Maximum electron energy <20 MeV
- Collimator acceptance 1% (for 0.5 mm slit)
- Maximum divergence angle 20 mrad
- Full energy coverage with magnetic field scan

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