

FACILITY: PS215/CLOUD experiment in T11 beamline (East Hall)

GOALS & JUSTIFICATION:

- Extend the molecular understanding of atmospheric aerosol particle formation and growth, including the role of ions
- Aerosols represent the largest source of uncertainty in climate models and CLOUD remains the unique facility in the world for these experiments, so there is urgency to continue taking data during LS3

SCOPE:

- We require all the CLOUD facility and its infrastructure in the East Hall (bdg. 157), with the exception of the PS beam (cosmic rays will be used as the ion source). The infrastructure includes electrical power, cooling supplies (Trane), deionized water, gas system, cryogenic liquids (N2 and O2), crane support and IT network

SCHEDULING:

- Data-taking during Sep-Dec of each year during LS3 (2026-2028); PS beam is expected to be back by Q3, 2027, so only 1 year of planned CLOUD operation (2026) will be affected by the PS shutdown during LS3
- Access to the T11 experimental zone at other times during LS3 for modifications and upgrades to the CLOUD facility

SERVICES REQUIRED:

EN/CV	Regular maintenance, possible (small) improvements and repairs of water chiller (Trane) and ventilation systems in T11 zone, control room and chemical lab	SY/RF, ABT, EPC	none
TE/VSC	Surface cleaning and coatings (gold, silver) for vacuum seals and other items	SY/STI, BI	none
BE/EA TE/CRG	Management of liquid N2 and liquid O2 supply orders and deliveries	EP/DT	Engineering & resources support; gas system support
BE/CSS	none	EN/HE	Transport and building 157 East Hall crane support
HSE/RP	Control and handling of radioactive and X-ray sources	EN/MME	Design and fabrication of special equipment for CLOUD
EN/EL	Repairs and (small) improvements to electricity distribution in T11 zone, as needed	EP/DI	Safety inspections for each CLOUD run

OTHER RELEVANT INFORMATION:

- CLOUD continued successful operation during LS2 except when excluded by the East Area upgrade