## ***Discussion for Accelerator Applications: QUASAR Group Away Day, 23rd May 2022***

***Possible applications for Gas Jet Monitor:***

1. Characterize the Electron Beam properties and Quantum Yield of the Photocathodes (In-Site, at the time of deposition)

***Possible application for qHAM*** (Most of these are future applications to explore which are related to accelerator physics also):

1. Surface roughness determination of Photocathodes while deposition
2. To study the effects of Laser ablation on the Photocathodes (In situ, via coupling the qHAM with Electron Gun).
3. It can be used for many day-to-day activities such as spraying painting for quality determination.
4. Possibilities with Biological samples in Gel form
5. Dielectric structures/Masks in electronics
6. Thin film Nb-copper superconducting cavities for determining the uniformity of the surface.
7. Optical beam loss monitor degradation studies (In-Situ)

Overall suggestion was to explore the possibilities ***to make the gas jet monitors compact, easily portable with low maintenance***.

***3D X-ray imaging***: Proof of Concept measurements are already done. Next step is to make a robust and compact device matching with industry standards to provide good quality images.

***Possibilities for collaborations/funding:***

1. Engagement of companies/Industries: collaboration and contribution from non-academic partners should be mentioned clearly in the proposal and it should have some significant value towards the proposal.

***Improving Research activities in the lab:***

1. Electronic logs and detailed manuals for each experiment, simulation result and equipment should be maintained for proper handover to future users/students. A lot of time is wasted in repeating/rectifying the same error/mistakes.
2. Basic training should be provided for simulation softwares, machine learning and programming languages depending upon the requirement.

***Possible Machine Learning applications:***

1. Automated alignment system for Nozzle-skimmer assembly or optical assemblies.