**Vacuum Injection and Light Capture Protocol for MBT Particle Forge**

**Material Feedstock Introduction**

To deliver raw material for MBT synthesis inside the particle forge, the most controlled and practical method is the use of a remote-activated seed target:

* Ablation Target:

A small pellet or thin film of feedstock material (e.g., graphite for carbon, or other elements as needed) is positioned at the geometric centre of the vacuum chamber before final pump-down.

* Remote Activation:

After achieving ultra-high vacuum and stable rotational conditions, a pulsed laser is fired through a window to ablate (vaporise) a precise amount of material into the vacuum at the desired moment. This allows the chamber to remain sealed and uncontaminated throughout the process.

* Timing:

Laser ablation can be synchronised with the rotational phase or field conditions to optimise when the atoms/molecules are released into the well, maximising MBT field interaction and material capture.

**Photon Injection and Capture (Light-to-Matter Conversion)**

The ultimate MBT goal is to trap and convert photons directly into matter using the rotating vacuum forge. The practical sequence:

* Laser Pulse:

Inject a high-intensity, well-collimated laser pulse into the vacuum chamber, targeting the central region where the field is most intense.

* Photon Persistence:

With no matter present and the chamber highly evacuated, photons introduced into the system will reflect off the chamber walls or mirrors and persist until they are either absorbed or—per MBT theory—trapped by the engineered curvature well.

* Experimental Uncertainty:

The timescale for photon capture may depend on:

* + Chamber geometry and quality of vacuum,
  + Degree of rotation and MBT curvature depth,
  + Reflectivity or absorption losses,
  + Potential enhancement from internal focusing optics (e.g., parabolic mirrors converging the beam onto the well).
* Optimisation Path:

Initial experiments should focus on detecting any deviation or “dip” in the laser’s path as evidence of MBT curvature effects.

If successful, additional optics or focusing techniques (mirrors, lenses) can be introduced to increase the probability of photon trapping and eventual light-to-matter conversion.

**Contingency and R&D Iteration**

* If photon capture or conversion is not immediately observed, iterative tuning (increased spin, higher laser energy, refined chamber shape, enhanced focusing) will be pursued.
* Meanwhile, classical material synthesis (e.g., graphene from ablation seed) can proceed in parallel to demonstrate immediate device fabrication while perfecting the ultimate light-to-matter process.

Summary:

By combining remote-activated ablation targets for atomic feedstock and a laser-injection protocol for photon capture, the MBT particle forge enables both conventional quantum material synthesis and frontier exploration of direct light-to-matter conversion—all without breaking vacuum or interrupting rotation. Experimental optimisation and real-time diagnostics will guide each stage, ensuring both rapid proof-of-concept and a clear roadmap toward the ultimate MBT quantum device.