The Hybrid Trapped Field Magnet Lens (HTFML) exploits two different characteristics of type-II superconductors:

1) The "vortex pinning effect" of an outer superconducting bulk cylinder, which acts as a trapped field magnet (TFM) using field-cooled magnetisation
2) The "diamagnetic shielding effect" of an inner bulk magnetic lens, which concentrates an external magnetic field within its bore.

The HTFML can reliably generate a concentrated magnetic field in the centre of the lens that is higher than the trapped field from the cylindrical bulk TFM and the external magnetising field, even after the externally applied field decreases to zero.

**HTFML Concept & Modelling Results**

**Numerical results:**

**Case 1:**
- Exploit difference in $T_c$ of two bulk materials, e.g., MgB$_2$ ($T_c = 39$ K), GdBaCuO ($T_c = 92$ K)

**Case 2:**
- Using same material for whole HTFML, e.g., GdBaCuO, but utilising separate cooling mechanism for cylinder & lens

**HTFML Experimental Results**

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<tr>
<th>$B_{exp}$ (T)</th>
<th>$B_{TFM}$ at $TS = 5$</th>
<th>$B_{TFM}$ at $TS = 10$</th>
<th>$B_{HTFML}/B_{exp}$ at $TS = 10$</th>
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