Another experiment in progress, under construction for seven years, is our Three meter spherical Couette cell. It has identical geometry but is larger by a factor of five and is now operating with water as a test fluid.

**Meridional probe array**

**Experimental setup**

Our experimental work in spherical Couette flow is directly motivated by the geometry of Earth's core, so we seek to research in the same two-dimensional parameters as possible. Following previous work (Shine, 2004) that explored rotating annular systems, this approach is designed to simulate the geomagnetism of the core with two independently rotating concentric spheres, each with its own magnetic field. In this work, a DC magnetic field is applied parallel to the rotation axis, with magnitude 150 G, applied by a pair of external electromagnets. The lack of our data comes from an array of 25 Hall probes, which measures the components of magnetic induction along a meridian and four additional locations around the equator. One more Hall probe measures the axial component of the field \(\chi\) near the lower boundary (see diagram).

**Observed inertial modes**

<table>
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<tr>
<th>Geometry: Our experimental data, taken in a spherical shell geometry, agrees well with theoretical wave models for the full sphere. What role do the inner sphere and shell play?</th>
<th>Open questions: Geometry: Our experimental data, taken in a spherical shell geometry, agrees well with theoretical wave models for the full sphere. What role do the inner sphere and shell play?</th>
</tr>
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</table>

**Integration with numerical models**

Integrating our experimental results with numerical models of the core's ambient fields would allow for greater insights into the role of the Earth's core in generating magnetic field patterns. This integration could provide a more comprehensive understanding of the magnetic field's behavior and its interaction with the fluid core.