

Abstract Submitted  
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**Explaining Quantum Numbers as Hemispherical Coordinates<sup>1</sup>**

ARNO VIGEN, None — I present a visual method to explain the abstract concept of quantum numbers. It maps the quantum numbers to hemispherical coordinates and thereafter to the distributions of electron shells as longitudinal rings. The electron rings at same energy and angle, so longitudinal, become a useful 3D atomic model.

- 1<sup>st</sup> - Radial Count starting with 1
- 2<sup>nd</sup> – Inclination / Longitudinal Count Starting with 0 at the Poles in 2 hemispheres (subshell-s)
- 3<sup>rd</sup> – Latitude distribution with a 0 meridian with -1, +1, and so on from that. Remember that the other hemisphere, and a 2<sup>nd</sup> layer at the same count, offset by phase (180-degrees) for tightest fit
- 4<sup>th</sup> – Hemisphere which is -1/2 and +1/2 as only the energy in the equation.

The 3D mechanics is compelling and a different path than abstract formulas to reach more students.

<sup>1</sup>None

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None

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