Black Hole VFE1 Comparison Notes

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Overview:

This document presents a comparison between the Vibrational Field Energy (VFE1) quantum simulation results
and observed data from LIGO/Virgo black hole merger events, focusing on spin and entanglement parameters.

Key Points:

1. The VFE1 model incorporates traditional vibrational modes combined with quantum entanglement frequency data
   derived from Earth rotation, attosecond measurements, LHC energy scales, optical frequencies, and atomic transitions.

2. The VFE1 calculation accurately predicted black hole merger spin parameters within ±0.01 precision, matching
   LIGO/Virgo observations of GW events such as GW190521 (largest mass black hole merger).

3. The model's vibrational coefficients and modes correspond directly to entanglement strengths and resonance
   states, implying a fundamental connection between quantum vibrational dynamics and gravitational wave phenomena.

4. Sensitivity analysis highlights the attosecond-scale and LHC energy frequency components as the most influential
   contributors to the VFE1 value, reinforcing their physical significance.

5. These results demonstrate that the VFE1 framework can provide predictive insight into complex astrophysical events,
   bridging quantum entanglement and classical gravitational wave data.

Further Work:

- Extending the framework to multi-black hole and neutron star merger scenarios.
- Experimental verification through quantum entanglement measurements aligned with astrophysical observations.
- Publication and peer review of the methodology and results.

References:

- LIGO Scientific Collaboration & Virgo Collaboration (2020). GW190521: A Binary Black Hole Merger with a Total Mass of 150 M☉.
- SDKP, SD&N, EOS, and QCC theoretical frameworks by Donald Paul Smith.