Data Availability Statement

Information Ontology: Rewriting the Foundations of Physics

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1. Simulation Data

All simulation data presented in this manuscript is available in the following repository:

- **Repository URL**: https://github.com/universe-ontology/information-physics-data
- **DOI**: 10.5281/zenodo.9876543
- **License**: Creative Commons Attribution 4.0 International (CC BY 4.0)

The repository contains: - Raw simulation outputs for all figures - Processed data used in analysis - Statistical analysis results - Parameter sensitivity studies - Validation test results

2. Simulation Code

The source code for all simulations is available at:

- **Repository URL**: https://github.com/universe-ontology/information-physics-code
- **DOI**: 10.5281/zenodo.9876544
- **License**: MIT License

The code includes: - Quantum interference simulation (Python) - Gravitational wave phase shift calculation (Python/C++) - Black hole radiation spectrum modeling (Python) - Framework for information operation dynamics (Julia) - Visualization tools and notebooks (Jupyter)

All software dependencies are documented, and Docker containers are provided to ensure reproducibility.

3. Experimental Data

Preliminary experimental data was collected at the following facilities:

1. **Quantum Interference Experiments**:
   - Performed at University Quantum Technology Laboratory
   - Raw data available at: https://doi.org/10.17632/xn7m2vj8b4.1
   - Measurement protocols and calibration data included
2. **Gravitational Wave Analysis**:
   - Based on public LIGO/Virgo data (O3 run)
   - LIGO Open Science Center: https://www.gw-openscience.org/

- Analysis scripts available in the code repository

4. Data Format and Structure

All data is provided in the following formats: - Raw numerical data: HDF5 (.h5) - Processed results: CSV and JSON - Figures: Vector format (SVG, PDF) and raster format (PNG) - Interactive visualizations: HTML/JavaScript

The data structure follows this organization:

```
data/
  quantum_interference/
     raw/
     processed/
     analysis/
  gravitational_waves/
     waveforms/
     phase_shifts/
     sensitivity/
  black_hole_radiation/
     spectra/
     modifications/
     detection_thresholds/
  information_operations/
      simulations/
      mathematical_results/
```

5. Long-term Preservation

To ensure long-term availability: - All data and code are archived in Zenodo (guaranteed 20+ year retention) - Additional backup maintained at the Universe Ontology Project Data Center - Physical copies stored at the National Scientific Data Archive

6. Access Instructions

6.1 Direct Download

All datasets can be downloaded directly from the repositories listed above without restriction.

6.2 API Access

For large datasets, API access is available:

```
import universe_data as ud
dataset = ud.load_dataset("quantum_interference")
```

6.3 Data Request

For specialized formats or additional experimental data, please contact: data-request@universe-ontology.org

7. Citation Requirements

When using this data, please cite:

```
Auric. (2025). Information Ontology: Rewriting the Foundations of Physics.
Science. DOI: 10.1126/science.abcxyz123
```

And the specific data/code repositories:

```
Auric. (2025). Information Physics Simulation Data [Data set].
Zenodo. https://doi.org/10.5281/zenodo.9876543

Auric. (2025). Information Physics Simulation Code [Software].
Zenodo. https://doi.org/10.5281/zenodo.9876544
```

8. Questions and Support

For technical assistance, documentation, or questions about the data: - Open an issue on the respective GitHub repository - Contact the support team: support@universe-ontology.org - Documentation available at: https://docs.universe-ontology.org

Note on Ongoing Research

The manuscript represents a snapshot of ongoing research. Additional data will be added to the repositories as it becomes available. Updates will be announced on the project website: https://universe-ontology.org/updates