"""

Observational Tests Framework

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"""

class ObservationalTests:

def \_\_init\_\_(self):

self.load\_experimental\_data()

def validate\_theory(self, predictions):

"""

Comprehensive validation against observational data

"""

validation = {

'quantum\_tests': self.quantum\_validation(predictions),

'gravitational\_tests': self.gravitational\_validation(predictions),

'cosmological\_tests': self.cosmological\_validation(predictions)

}

return validation

def quantum\_validation(self, predictions):

"""

Validate quantum scale predictions

"""

tests = {

'interference': self.check\_interference\_patterns(),

'entanglement': self.check\_entanglement\_correlations(),

'decoherence': self.check\_decoherence\_rates()

}

return tests

def gravitational\_validation(self, predictions):

"""

Validate gravitational predictions

"""

tests = {

'solar\_system': self.check\_solar\_system\_dynamics(),

'binary\_pulsars': self.check\_binary\_pulsar\_timing(),

'gravitational\_waves': self.check\_gw\_observations()

}

return tests

def cosmological\_validation(self, predictions):

"""

Validate cosmological predictions

"""

tests = {

'cmb': self.check\_cmb\_spectrum(),

'bao': self.check\_baryon\_acoustic\_oscillations(),

'structure': self.check\_large\_scale\_structure()

}

return tests

"""

Implementation of specific tests

"""