Gravitation in 3D Spacetime JOHN LAUBENSTEIN, KANDI COCK-REAM, IWPD Research Center — 3D spacetime was developed by the IWPD Scale Metrics (SM) team using a coordinate system that translates n dimensions to n-1. 4-vectors are expressed in 3D along with a scaling factor representing time. Time is not orthogonal to the three spatial dimensions, but rather in alignment with an object's axis-of-motion. We have defined this effect as the object's "orientation" (X). The SM orientation (X) is equivalent to the orientation of the 4-velocity vector positioned tangent to its worldline, where $X^{-1} = \sin\theta + 1$ and θ is the angle of the 4-vector relative to the axis-of -motion. Both 4-vectors and SM appear to represent valid conceptualizations of the relationship between space and time. Why entertain SM? Scale Metrics gravity is quantized and may suggest a path for the full unification of gravitation with quantum theory. SM has been tested against current observation and is in agreement with the age of the universe, suggests a physical relationship between dark energy and dark matter, is in agreement with the accelerating expansion rate of the universe, contributes to the understanding of the fine-structure constant and provides a physical explanation of relativistic effects.

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