

# Absolute Being vs Relative Becoming

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## Abstract

Contrary to our immediate and vivid sensation of past, present, and future as continually shifting non-relational modalities, time remains as tenseless and relational as space in all of the established theories of fundamental physics. Here an empirically adequate generalized theory of the inertial structure is discussed in which proper time is causally compelled to be tensed within both spacetime and dynamics. This is accomplished by introducing the inverse of the Planck time at the conjunction of special relativity and Hamiltonian mechanics, which necessitates energies and momenta to be invariantly bounded from above, and lengths and durations similarly bounded from below, by their respective Planck scale values. The resulting theory abhors any form of preferred structure, and yet captures the transience of now along timelike worldlines by causally necessitating a genuinely becoming universe. This is quite unlike the scenario in Minkowski spacetime, which is prone to a block universe interpretation. The minute deviations from the special relativistic effects such as dispersion relations and Doppler shifts predicted by the generalized theory remain quadratically suppressed by the Planck energy, but may nevertheless be testable in the near future, for example via observations of oscillating flavor ratios of ultrahigh energy cosmic neutrinos, or of altering pulse rates of extreme energy binary pulsars.

**Keywords:** transience, now, becoming, tensed time, special relativity, Planck scale, quantum gravity

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