

The Other Half of Special Relativity: Linear Excitation Hierarchies

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Email Excerpt

... Retirement is great in that I get to be my boss and do my research agenda, which is, at this point, trying to convince a lot of the more theoretical members of physics that they've fallen pretty much into mysticism that's impeding real progress. *Applied* physics is going gangbusters well, but 50 years of literally null progress on the theory side says to solution space navigator folks like us that something pretty deep in the assumption hierarchy is wrong and requires backtracking. Remarkably, the theory folks have increasingly started defining the daily production of astonishingly deep piles of mutually contradictory, often insanely complicated (in the sense of being humanly unverifiable), and experimentally untestable "theory" papers as progress.

Anyway, my regression has gotten to the point that just this week, I've been working on "the other half of special relativity," the part where Einstein kind of threw up his hands and copped out by proposing a "block universe." The block universe — which is mostly a Minkowski idea, what a mess that fellow made of things — doesn't resolve time paradoxes in any meaningful way, but instead just says the solution is already there and never mind where it came from.

The missing part of SR is the linear momentum energy excitation hierarchy. (Incidentally, a parallel hierarchy for rotating frames answers the old Mach rotating bucket paradox and quickly locks into particle physics.) Adding the linear excitation hierarchy fully preserves the Poincare symmetries that allow all observers to see themselves as having the "fastest" clocks of any momentum frame — that's the old twin paradox — yet also converts all clock rates into *absolute* rates relative to the frames from which they were accelerated.

The simplicity that results is surprising. Why does the spaceship twin age more slowly? Literally for no other reason than this: The originating rest frame had to *add linear momentum energy* to get her moving. Her clock slows exactly and in a very, very real way relative to her origin from that point forward, zero mysticism allowed. That's also why particle accelerators have slow-time particles: They add enormous linear momentum excitations to them, period. Remove that energy by slowing her down, and her clocks speed up again. Under no circumstances do you need to worry about anything more than how much linear momentum *energy* was added relative to the frame of origin.

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