New tools for relativistic collision calculations FELIX T. SMITH,
Retired — In a varying and uncertain relativistic transition region of velocity the
methods available for treating collisions change completely, not only because of the
v/c change but in the need to go from a 3-space to a space-time geometry. For
problems with 2 or more particles this seems to require 2 or more independent time
variables, a complication unseen in the real world. In an alternative form of special
relativity I have shown that Lorentz covariance is completely obeyed if one refers a
single time variable to a cosmic proper time and uses a Hubble expanding position
frame of a negative curvature hypersphere for the 3 position coordinates of each of
the n particles. The cosmic dimensions of course change nothing on a local scale
except to clarify the validity of using a single time. This change alone clarifies
and simplifies treatment of the transition connecting nonrelativistic and relativistic
domains. The variables most useful for such a treatment and the form of the v/c
correction terms that are encountered will be exhibited.

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