1172-76-334 **Pavel M Lushnikov***, Department of Mathematics and Statistics, MSC01 1115, 1 University of New Mexico, Albuquerque, NM 871310001, and **Natalia Vladimirova**. *Logarithmic scaling and critical collapse in Davey-Stewartson equation.*

Wave collapse occurs in numerous nonlinear physical systems resulting in catastrophic self-focusing of laser beams in optical media, collapse of Bose-Einstein condensate and white foam formation on the crests of oceanic waves. Underlying equations for all these diverse effects are two-dimensional nonlinear Schrodinger equation (NLSE) and its nonlocal extension, Davey-Stewartson equation (DSE). We find that collapses in both NLSE and DSE obey the tail minimization principle when physical systems dynamically choose self-similar-type solutions which minimize the spatial tails of the collapsing solution on the border of the spatial collapsing region. This minimization ensures that the singularity (collapse) reaches in fastest possible time (propagation distance for optical applications) because the maximum optical power (in optical applications) or number of particles (in Bose-Einstein condensate) are captured in the collapsing region. A weak escape of particles (optical power) from that region is controlled by an analog of quantum tunneling. (Received August 31, 2021)