1163-62-33   **Ivo D Dinov*** (`statistics@umich.edu`), 426 N. Ingalls Str, Ann Arbor, MI 48109. *Data Science, Time Complexity, and Spacekime Analytics.* Preliminary report.

Human behavior, communication, and social interactions are profoundly augmented by the rapid immersion of digitalization and virtualization of all life experiences. This process presents important challenges of managing, harmonizing, modeling, analyzing, interpreting, and visualizing complex information. There is a substantial need to develop, validate, productize, and support novel mathematical techniques, advanced statistical computing algorithms, transdisciplinary tools, and effective artificial intelligence applications. Spacekime analytics is a new technique for modeling high-dimensional longitudinal data. This approach relies on extending the notions of time, events, particles, and wavefunctions to complex-time (kime), complex-events (kevents), data, and inference-functions. We will illustrate how the kime-magnitude (longitudinal time order) and kime-direction (phase) affect the subsequent predictive analytics and the induced scientific inference. The mathematical foundation of spacekime calculus reveal various statistical implications including inferential uncertainty and a Bayesian formulation of spacekime analytics. Many 4D Minkowski spacetime processes are extended to a 5D spacekime manifold, where a number of interesting mathematical problems arise. (Received July 15, 2020)