The CRASH Clock

A group of scientists from the Princeton University, UBC, and University of Regina submitted a pre-print on the arXiv, where they

> [...] introduce the Collision Realization And Significant Harm (CRASH) Clock, a [Key Environmental Indicator] (KEI) that evaluates the stress on the orbital environment. (p. 5)

The idea is to:

> to determine how quickly we could expect a collision [between satellites] if collision avoidance manoeuvres were to suddenly stop or if there was a severe loss in situational awareness (such as due to a major solar storm or catastrophic software issue). It is a measure, in part, of the degree to which the orbital environment is a house of cards. (p. 5)

According to their work, back in 2018 (before the mega constellation era), the CRASH clock was 121 days. Now (as of June 2025), the CRASH clock is 2.8 days. (p. 6)

> According to the most recent SpaceX biannual report, Starlink satellites made 144,404 collision avoidance manoeuvres in the period between 1 Dec 2024 and 31 May 2025, averaging to 41 manoeuvres per satellite per year, or one collision avoidance manoeuvre every 1.8 minutes across the whole megaconstellation. (p. 5)