Models based on crevasse/rift analogues on Antarctic ice shelves can explain the presence of similar cracks on Europa and calculate how fast they grow.

- Past exploration missions observed lineaments on the surface of the Jovian moon Europa; these curved features, spaced by cusps, are called cycloids and are thought to be formed as result of ice failure.
- A fracture mechanics model based on Antarctic analogues was developed and applied to observed cracks.
- The model showed cycloids evolve as a series of nearly instantaneous events (propagation rate of ∼100 m/s), spaced by periods of inactivity, similar to rifts on Antarctic ice shelves. Considering dormant periods between fracturing events, cycloids grow at 10-100 m/day, but require months to fully develop.
- The introduction of standby periods between fracturing events could inform future studies of the rotation state of Europa crust.

Poinelli, et al. (2019, accepted) GRL