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A Dynamic Bifurcation Criterion for Thermal Runaway During the Flash Sintering of Ceramics

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In this work we mathematically model the densification of ceramics under flash sintering using a model based on a system of nonlinear differential equations. Approaches to analyze the system either by numerical solutions or via bifurcation theory are presented. The shown model explains the two main features of flash sintering: A characteristic electrical field threshold dependent on the temperature, and an incubation time to flash sintering.