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**Cavitation in elastomeric solids: A defect-growth theory**[1] OSCAR LOPEZ-PAMIES, State University of New York at Stony Brook, MARTIN IDIART, TOSHIO NAKAMURA — A new theory is introduced to study the phenomenon of cavitation in soft solids that, contrary to existing approaches, simultaneously: (i) applies to large (including compressible and anisotropic) classes of nonlinear elastic solids, (ii) allows to consider general 3D loading conditions with arbitrary triaxiality, and (iii) incorporates direct information on the initial shape, spatial distribution, and mechanical properties of the underlying defects at which cavitation can initiate. The basic idea is to cast cavitation in elastomeric solids as the homogenization problem of nonlinear elastic materials containing random distributions of zero-volume cavities, or defects. In spite of the generality of the proposed approach, the relevant calculations amount to solving tractable Hamilton-Jacobi equations, in which the initial size of the cavities plays the role of "time" and the applied load plays the role of "space."

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