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NUMERICAL AND EXPERIMENTAL STUDIES OF EXTREME DEFORMATION

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ABSTRACT

This session focuses on problems involving extreme deformation—impact, penetration, high-rate forming, and other scenarios where materials undergo large strain, localization, and eventual breakup. These problems challenge both numerical methods and experimental testing.

On the numerical side, mesh-based methods often struggle with element distortion and the handling of evolving discontinuities. Particle methods such as MPM [1-2] and SPH offer alternatives, though they come with their own accuracy and efficiency issues. On the experimental side, high-speed imaging and Hopkinson bar tests provide critical data for validation. The session welcomes contributions on any numerical method, any material model, and any experimental technique addressing this class of problems.

The aim is to bring together researchers working on numerical methods, constitutive models, and experimental techniques for extreme deformation problems.

REFERENCES

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[2] LIANG, Y., LIU, Y., AND ZHANG, X. *An efficient staggered grid material point method*, Computer Methods in Applied Mechanics and Engineering. VOL. 352, 85-109, 2019.