



## **Self-similar composite asymptotic solution for velocity driven non-adiabatic shear localization**

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Mechanical work converted into heat may alter temperature in a zone of localized shearing if the rate of heat generation is not equal to the cooling rate by heat conduction. What happens next depends on the boundary or loading conditions. Keeping stress at the same level in time would cause ever accelerating rise of heat generation and thermal runaway. Keeping constant velocity jump across a shear zone may self-adjust the rate of shear heating in balance with the cooling rate. Self-similar composite asymptotic solution for velocity driven strain and heat anomalies localized a non-adiabatic shear band is presented. Transient numerical experiments are used to verify the solution and to demonstrate that it is an 'attractor' for solutions with general initial conditions.