Discussion:

Noise and temperature effects on avalanches in strained amorphous solids

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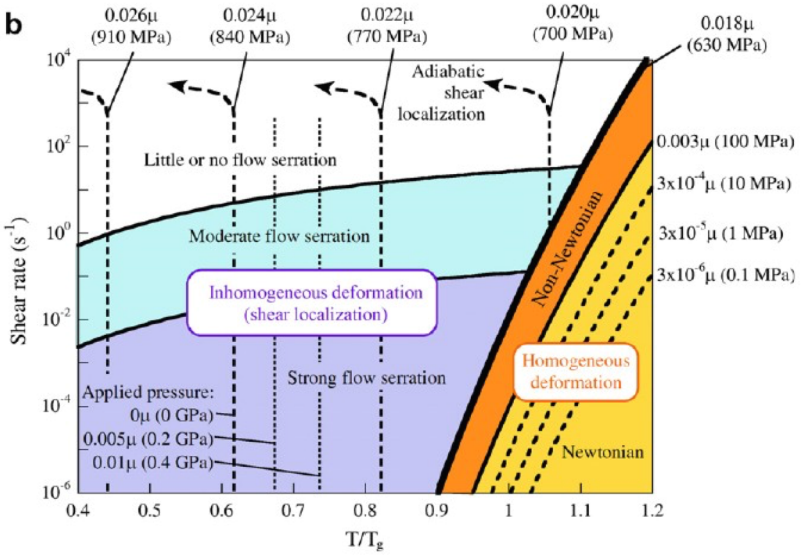
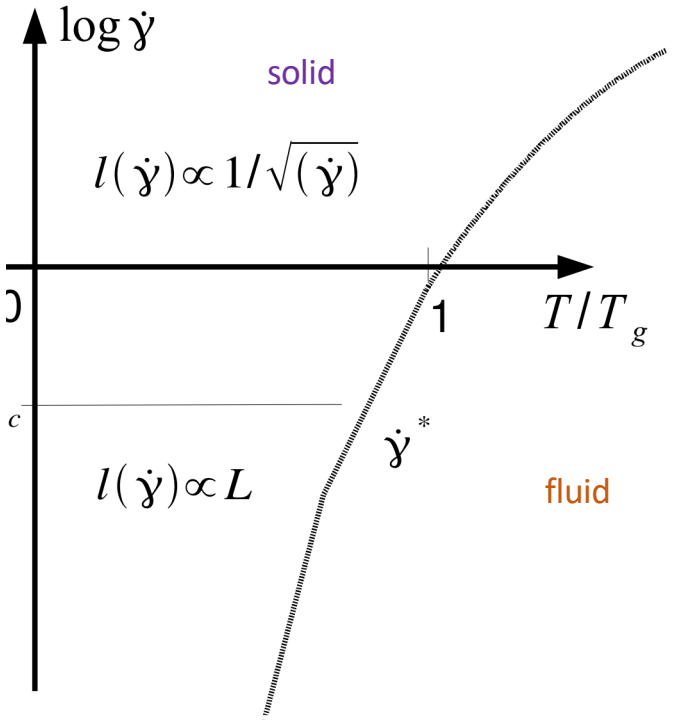
Oct 22, 2018

Can we extend insights from AQS to explain features of finite strain rates and temperatures?



Schuh *et al*, Acta Mat. 55, 4067 (2007)



Questions:

- Many elasto-plastic models treat eshelby inclusions as elementary events with a known interaction kernel and propagation speed/delay time. This is clearly(?) right in AQS. But is this a misleading limit?
  - at finite strain rates, we expect fluctuations from one event to get cut off by another event at a scale proportional to $\dot{\gamma}^{-1/2}$
  - delay times are also affected by finite strain rates
  - strong correlations between individual events persist at fairly high temperatures
  - stress fields (and elastic moduli?/propagation speeds) are highly temperature dependent
- Do the assumptions in elasto-plastic models break down at finite strain rates/ at finite temperatures?
  - If so, why do they seem to work well for matching simulations (c.f Zapperi/Vandembroucq)?
- Are there issues with extracting stability exponents due to the assumption of uncorrelated elementary events?
- What are implications for mean-field models for plasticity (SGR, STZ, etc?), which often assume elementary excitations are localized or at least meso-scopic?