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Johari-Goldstein β relaxation events are metabasin transitions, and are precursors to α relaxation MARCUS CICERONE, MIAOCHAN ZHI, JOHN BENDER, MADHUSUDAN TYAGI, NIST - Natl Inst of Stds & Tech — In 1970, Johari and Goldstein discovered a new relaxation process in liquids (β_{JG} relaxation), which is faster than the α relaxation and appears to emerge only when α relaxation times are on the order of ns and longer. Over the intervening decades, much work has been done to understand the origin of this relaxation process, but its nature is still an open question. It is widely felt that β_{JG} relaxations are a precursor to α relaxations, and it has been suggested that they may be related to transitions between inherent state (IS) or metabasin (MB) wells in a potential energy landscape. In this work we identify the signatures of IS and MB transitions in quasielastic neutron scattering, and use neutron backscattering to show that the latter are to be identified with β_{JG} relaxations.[1] We then use optical Kerr effect measurements to show directly that β_{JG} relaxation is a precursor to α relaxation.
[1] M.T. Cicerone and M. Tyagi, arXiv:1607.07393v2

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