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Fluctuating Mobility Generation and Transport in Glasses APIWAT WISITSORASAK, PETER WOLYNES, Rice University — Complex spatiotemporal structures developing in glasses during aging and heating processes involve the interplay between fluctuating mobility generation and transport. To understand these structures, we extend mode-coupling theory to inhomogeneous system and combine the theory with activated events within the framework of Random-First Order Transition theory of glasses. We explore using numerical methods the process of fluctuating mobility generation and transport in glasses as the glasses age after cooling and as they rejuvenate after heating. This scheme allows us to investigate the dynamical heterogeneity in glasses below the glass transition temperature. We found a growing length scale and an increasing relaxation time upon the aging process. On the contrary, in the rejuvenating process, the mobility propagates from the high mobility at free surfaces into the bulks which resembles flame front propagation in combustion theory.

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