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Kohlrausch Parameter Determination for Simple Chain Models<sup>1</sup> JOHN MCCOY, TAYLOR DOTSON, JULIEANNE HEFFERNAN, KEENAN DOTSON, Materials Department, New Mexico Tech, Socorro, NM 87801, JOANNE BUDZIEN, DOUGLAS ADOLF, Sandia National Laboratories, Albuquerque, NM 87185 — The second Legendre polynomials of the end-to-end vector of freely jointed and freely rotating chains were extracted from molecular dynamics simulations and analyzed in terms of the Kohlrausch-Williams-Watts (KWW) function. Of particular interest is the variation of the stretching exponent,  $\beta$ , as a function of state point and, consequently, of the detailed compliance with time-temperature superposition. A new analysis methodology is introduced that permits the determination of  $\beta$  at the needed level of precision. Detailed time-temperature superposition does not hold for freely-jointed or freely-rotating chain liquids. Indications of a breakdown in time-temperature superposition are also found in violations of Stokes-Einstein and Debye-Stokes-Einstein behavior.

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