1035-60-652 **Yannan Sun*** (ysun@math.wsu.edu), 1535 NE Merman Dr. C6, Pullman, WA 99163. *Tail Dependence of Multivariate Distributions.*

Extremal events occurring in engineering and financial systems are usually dependent, and such dependence profoundly affects the system dynamics. Tail dependence indexes describe the amount of dependence in the upper/lower tail of a multivariate distribution and play an important role in analyzing extremal dependence. While the bivariate tail dependence is often studied by the method of copulas, this method becomes ineffective in higher dimensions. In this paper, we developed a general method to evaluate the tail dependence of heavy-tailed scale mixtures of multivariate distributions whose copulas are not even explicitly accessible. Our method properly re-scales the marginal distributions so that asymptotically the scaled random variables have the same tail marginal distributions and assessment of the tail dependence avoids taking the complicated marginal transforms on the entire distribution. This analysis leads tractable formulas of tail dependence indexes which depend on joint moments and the heavy tail parameter of the mixing random variable. The formulas can be applied to a wide range of most useful multivariate distributions and also pave a way to efficient numerical evaluations of their tail dependence indexes. (Received September 13, 2007)