GRADUATE SEMINAR

Jingjiao Chen

Heavy-tailed crack distribution families and applications

MSc Student supervised by Taehan Bae

Monday, March 28

3:30 PM

Math Lounge (CW307.20)

Abstract: The heavy-tailedness and right-skewness are two distinct features of data sets on extreme events such as natural disasters. Although the three-parameter crack distribution family, a mixture of the inverse Gaussian distribution and length biased inverse Gaussian distribution, has a flexibility to fit some highly skewed data, the thin-tailedness of the normal distribution which forms a basis for the crack distribution, limits its use for modeling extreme values. In this talk, some concrete applications of the extreme value theory to the construction of extreme value crack distribution families will be discussed. The model fitting procedures will be presented with some discussions about simulation, truncations and model selections. The fitting results to a few real catastrophic data sets show that the heavy-tailed crack distribution with an appropriate choice of base density function outperforms several parametric distributions commonly used in modeling positively skewed and heavy-tailed extreme data sets.

University of Regina

Mathematics and Statistics