

Figure 1 is a plot showing the empirical and smooth cumulative distribution functions (CDFs) for the number of non-zero entries in the product of two sparse matrices. The x-axis represents the number of non-zero entries (ranging from 0.0 to 1.0), and the y-axis represents the cumulative probability (ranging from 0.0 to 1.0). The plot includes several curves:

- True:** A solid red line representing the true distribution.
- Empirical 90%:** A dotted green line representing the empirical CDF at the 90% confidence level.
- Empirical 50%:** A dashed green line representing the empirical CDF at the 50% confidence level.
- Empirical 10%:** A dotted green line representing the empirical CDF at the 10% confidence level.
- Smooth 90%:** A dotted blue line representing the smooth CDF at the 90% confidence level.
- Smooth 50%:** A dashed blue line representing the smooth CDF at the 50% confidence level.
- Smooth 10%:** A dotted blue line representing the smooth CDF at the 10% confidence level.

The plot demonstrates that the smooth CDFs (dashed and dotted blue lines) provide a better approximation of the true distribution (solid red line) compared to the empirical CDFs (dotted and dashed green lines), which exhibit significant deviations, particularly at the lower end of the x-axis.

