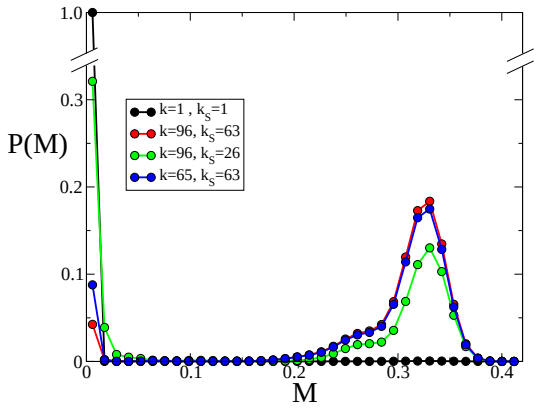

FIG. 11: **Distribution of spreading based on individual origins.** The probability distribution $P(M)$ of the infected percentage for the contact network of inpatients, when the epidemic starts at four nodes of different properties. The infection probability is $\beta = 4\%$, which is above the critical threshold. All distributions exhibit two peaks at similar ranges every time, i.e. around $M = 0$ (epidemics dies very fast) and $M \simeq 33\%$. However, the intensity of each peak differs, and in higher k-shells the majority of the realizations result in large infections, compared to the much higher ratio of zero-spreading realizations for origins of small k_S values.

the higher k_S value in the plot, the stronger peak is at the non-zero value, and very few realizations end up at $M = 0$ even for smaller degrees. On the contrary, an origin with larger degree k, but smaller k_S value results in a stronger peak at $M = 0$. These distributions converge quite well, and we can expect that nodes with small k_S will in general result in a higher peak at $M = 0$. The above means that if an infection can reach a critical mass of nodes then it will eventually cover a significant part of the network. The low k-shell nodes cannot reach this critical mass so that the infection dies at the early stages, resulting to the strong peak at $M = 0$. On the contrary, the neighborhood of high k-shell nodes is favorable for sustaining an infection at early stages, allowing the system to reach this critical mass.