1118-05-83 **Louis Petingi*** (louis.petingi@cai.cuny.edu), 2800 Victory Blvd. 1N, Staten Island, NY 10314. *Diameter-constrained network reliability, a generalization of the classical reliability.* Preliminary report.

Consider a probabilistic graph $G = (V, E)$, where edges fail independently with known probabilities (vertices are perfectly reliable), and given a set of terminal nodes $K \subseteq V$, the classical reliability, $R_K(G)$, introduced in the 1960s, is the probability that for each pair of terminal nodes $a, b \in K$, there exists an operational path connecting a and b.

In 2001, the Diameter-constrained reliability (**DCR**), $R_K(G, D)$, was introduced to measure the probability that each pair of terminal nodes is connected by a path of length D or less, given some diameter bound D. As the maximum length of any path in a network is of at most $n - 1$ edges (n is the number of nodes), then $R_K(G, n - 1) = R_K(G)$, thus the DCR represents a generalization of the classical reliability. This new reliability model measures performing objectives of a network in which short-enough paths connecting the terminal nodes would guarantee the network's functionality.

In this talk we present a survey of combinatorial and computational-complexity results shown for the DCR, in relationship to well-known properties established for the classical reliability, as well as open problems. (Received January 23, 2016)