Birnbaum component importance measure for reliability systems with dependent components

Patryk Miziuła
Institute of Mathematics, Polish Academy of Sciences

Importance measures of components of a reliability system were presented first by Birnbaum [2] in the 1960s. Since then, many more different types of measures have been invented (see, e.g., [4]). Importance measures of all the components form a signature which delivers an information about a ‘hierarchy’ of system components. This allows us to identify and pay attention to the most important components.

Almost all of the known component importance measures require the independence of component lifetimes. So far, the only exception has been the Barlow-Proschan measure ([1]) which was extended for the systems with dependent components by Iyer [3] and further investigated by Marichal and Mathonet [5]. In the talk a natural generalization of the classic Birnbaum measure will be presented. It is valid for arbitrarily dependent components. It is also related with the Barlow-Proschan-Iyer measure in the same way as the original Birnbaum and Barlow-Proschan measures are. The illustrative examples will be provided.

References