

# Algebraic properties of signature and their applications

Fabio Spizzichino

Dept. of Mathematics, University “La Sapienza”, Rome, Italy

The notion of signature (introduced in [Samaniego (1985)]) has been shown to be relevant for the comparison of systems when the components’ lifetimes are independent and identically distributed or, more generally, when they are exchangeable (see in particular [Kochar et al (1999)], [Boland and Samaniego (2004)], [Navarro and Rychlyk (2007)], [Navarro et al. (2008)], and references cited therein).

This concept can also reveal to be useful in the case of non-exchangeable lifetimes as pointed out in [Spizzichino (2008)] (some other papers in this direction are still in progress).

However two different approaches for defining the notion of *signature* emerge in a completely natural way when dealing with the non-exchangeable case; the two notions are generally different one from the other, but they collapse into the same notion in the case of exchangeability.

The talk will start with a brief discussion about this issue.

Then it will be shown that one of the two notions of signature is specially adequate in the study of the symmetries of a system and we discuss the interest of some related properties of algebraic type.