

Abstract Submitted  
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**Robustness and Assortativity for Diffusion-like Processes in Scale-free Networks**<sup>1</sup> ANTONIO SCALA, CNR-ISC, Uos “La Sapienza”, GREGORIO D’AGOSTINO, ENEA - CR “Casaccia”, VINKO ZLATIC, Theoretical Physics Division, Rudjer Boskovic Institute, GUIDO CALDARELLI, IMT Lucca Institute for Advanced Studies — By analyzing the diffusive dynamics of epidemics and of distress in complex networks, we study the effect of the assortativity on the robustness of the networks. We first determine by spectral analysis the thresholds above which epidemics/failures can spread; we then calculate the slowest diffusional times. Our results shows that disassortative networks exhibit a higher epidemiological threshold and are therefore easier to immunize, while in assortative networks there is a longer time for intervention before epidemic/failure spreads. Moreover, we study by computer simulations a diffusive model of distress propagation (financial contagion). We show that, while assortative networks are more prone to the propagation of epidemic/failures, degree-targeted immunization policies increases their resilience to systemic risk.

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