Application of the Fuzzy Theory in a Reservoir Operation Model to Study the Behavior of the Regularized Flow

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Abstract. This work concerns with the application of Fuzzy Theory in the hydrologic system as a reservoir, to evaluate its forecast capacity, in the calculation of the risk of collapse of systems composed by this type of body of water. In the development of the research, a methodology, transforming the equations of the hydrologic balance, in fuzzy equations, was applied. The flow and the income net were calculated, for different sceneries, as membership functions, where those control variables, with larger pertinence degree, were analyzed. The results showed that the methodology fuzzy could come as an important alternative in the calculation of the risk of collapse of hydrologic systems, as well as, it can, equally, come as a good alternative in the determination of the sustainability of water, in areas with high vulnerability degree, as it happens in semi-arid regions.

Keyword: Fuzzy Set Theory; Reservoirs Operation; Fuzzy Models

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