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Functional Differentiation in EVS modeling IRINA TROFIMOVA, CI Laboratory, WILLIAM SULIS, McMaster University — Ensembles with Variable Structures (EVS) were introduced in mid-1990s as stochastic milti-agent models in which agents possessed either formal diversity (described in a multi-dimensional vector space of abstract characteristics) or resource-oriented diversity (Trofimova, 2000). The process of functional differentiation (i.e. appearance of functional roles) is modelled as constraints on the flow of resources which pass through agents of the model. These constraints are: 1) the maximum amount of resource that an individual can accept from outside, 2) the maximum amount of resource that an individual can give back to the population or other environment, 3) distribution of the exchange of the resource over time (frequency and amount of the resource per step), and 4) the maximum amount of contacts that an individual can hold with such environment (sociability). Sociability appears to have a major impact on clustering dynamics within the population and to be an order parameter in phase transition in clustering behaviour, therefore it interfered with functional differentiation. Two patterns of functional differentiation were observed, before and after the phase transition in clustering, corresponding to sociability values below and after the critical points.

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