Mariya I. Soskova* (msoskova@fmi.uni-sofia.bg). Extensions of the Turing model for relative definability.

The mathematical analysis of the notion of definability is one of the principal objectives of Mathematical Logic. We wish to understand how one object can be used to specify another one. Depending on the mathematical nature of the objects in question and the method for the relative specification one can distinguish between many different approaches. In every case the approach gives rise to a reducibility between the objects, with a natural structural representation as a partial order, its degree structure, a model of relative definability.

The most studied model of relative definability between sets of natural numbers, is that of the Turing degrees based on the notion of Turing reducibility. A project by Ganchev, Soskov and M. Soskova is to examine the standard Turing model in a wider context. Two extensions of the Turing degrees are studied: the structure of the enumeration degrees, based on a weaker form of relative computability between sets of natural numbers; and a further extension, the structure of the omega-enumeration degrees, where the objects are sequences of sets of natural numbers and the reducibility incorporates the notion of uniformity. We will describe this work, comparing results about each structure. (Received January 30, 2012)