1172-03-195   **Valentina Harizanov**, The George Washington University, Department of Mathematics, Washington, DC 20037, and **Keshav Srinivasan***, The George Washington University, Department of Mathematics, Washington, DC 20037. *Effective ultrapowers of directed graphs, Part II.* Preliminary report.

While typical ultrapower constructions produce uncountable models, effective ultrapower constructions allow us to build countable non-standard models with interesting properties. We will present some of our recent results on effective ultrapowers for structures from various important classes of directed graphs and other classes. In general, by Dimitrov's theorem, only first-order properties expressed by sentences at lower levels of arithmetical hierarchy are preserved by effective ultrapowers. We give a classification of certain structures from concrete classes when the effective ultrapower is isomorphic to the original structure. For those structures that are not isomorphic to their effective ultrapowers, we further investigate which properties are not preserved. (Received August 27, 2021)