▶ JULIA KNIGHT, ALEXANDRA SOSKOVA AND STEFAN VATEV, *Effective coding and decoding structures*.

Department of Mathematics, Notre Dame University, 255 Hurley, Notre Dame, IN 46556 USA.
E-mail: `knight.1@nd.edu`.
Faculty of Mathematics and Informatics, Sofia University, 5 James Bourchier blvd., 1165, Sofia Bulgaria.
E-mail: `asoskova@fmi.uni-sofia.bg`.
Faculty of Mathematics and Informatics, Sofia University, 5 James Bourchier blvd., 1165, Sofia Bulgaria.
E-mail: `stefanv@fmi.uni-sofia.bg`.

Friedman and Stanley introduced Borel embeddings as a way of comparing classification problems for different classes of structures. A Borel embedding of a class K in a class K' represents a uniform procedure for coding structures from K in structures from K'. Many Borel embeddings are actually Turing computable.

When a structure $\mathcal{A}$ is coded in a structure $\mathcal{B}$, effective decoding is represented by a Medvedev reduction of $\mathcal{A}$ to $\mathcal{B}$. Harrison-Trainor, Melnikov, Miller, and Montalbán defined a notion of effective interpretation of $\mathcal{A}$ in $\mathcal{B}$ and proved that this is equivalent with the existing of computable functor, i.e. a pair of Turing operators, one taking copies of $\mathcal{B}$ to copies of $\mathcal{A}$, and the other taking isomorphisms between copies of $\mathcal{B}$ to isomorphisms between the corresponding copies of $\mathcal{A}$. The first operator is a Medvedev reduction. For some Turing computable embeddings Φ, there are *uniform* formulas that effectively interpret the input structure in the output structure.

The class of undirected graphs and the class of linear orderings both lie on top under Turing computable embeddings. The standard Turing computable embeddings of directed graphs (or structures for an arbitrary computable relational language) in undirected graphs come with uniform effective interpretations. We give examples of graphs that are not Medvedev reducible to any linear ordering, or to the jump of any linear ordering. Any graph can be interpreted in some linear ordering using computable Σ_3 formulas. Friedman and Stanley gave a Turing computable embedding L of directed graphs in linear orderings. We show that there do not exist $L_{\omega_1\omega}$-formulas that uniformly interpret the input graph G in the output linear ordering $L(G)$.