

- ▶ ONDŘEJ JEŽIL, *Limits of structures and total NP search problems*.

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For a class of finite graphs, we define a limit object relative to some computationally restricted class of functions. The properties of the limit object then reflect how a computationally restricted viewer “sees” a generic instance from the class. The construction uses Krajíček’s forcing with random variables [1]. We prove sufficient conditions for universal and existential sentences to be valid in the limit, provide several examples, and prove that such a limit object can then be expanded to a model of weak arithmetic. We then take the limit of all finite pointed paths to obtain a model of arithmetic where the problem `OntoWeakPigeon` is total but `Leaf` (the complete problem for **PPA**) is not. This can be viewed as a logical separation of the oracle classes of total NP search problems, which in our setting implies standard nonreducibility of `Leaf` to `OntoWeakPigeon`.

[1] JAN KRAJÍČEK, *Forcing with random variables and Proof complexity*, Mathematical Society Lecture Note Series, Cambridge University Press, 2011.