Research Highlight:
Degrees containing members of thin Pi^0_1 classes are dense and co-dense

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In the decades from 1980-2000, degree theory was arguably the most important area in the study of recursion theory. Since 2000, areas like reverse mathematics and algorithmic randomness become more active. As a consequence, properties of Pi^0_1 classes become more and more useful.

Recently, we studied computable enumerable (c.e.) degrees containing members of thin Pi^0_1 classes and those containing no members of such classes. We proved that the c.e. degrees containing no members of thin Pi^0_1 classes are dense in the c.e. degrees. We also proved that the c.e. degrees containing members of thin Pi^0_1 classes are dense in the c.e. degrees, improving a result of Cenzer, Downey, Jockusch and Shore in 1993. Thus, we obtain a new natural subclass of c.e. degrees which are both dense and co-dense in the c.e. degrees, while the other such class is the class of branching c.e. degrees. Fejer, in 1983 showed that the nonbranching degrees are dense and Slaman in 1991 showed that the branching degrees are dense.

Reference:
R.G. Downey, G.H. Wu, **Y. Yang**, "Degrees containing members of thin Pi(0)(1) classes are dense and co-dense". Journal of Mathematical Logic, 18, No. 1 (2018), Article Number: UNSP 1850001.