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Mixed-Integer Nonlinear Programs with On-Off Constraints.

We study optimization problems that have both nonlinear functional relationships between decision variables and 0-1 indicator variables that turn on and off these relationships. Problems of this class occur in a broad range of disciplines, including statistics, financial engineering, and engineering design. In this talk, we will describe strong relaxations and cutting planes for a substructure common to instances of these problems. Our primary focus will be on the case when the nonlinearities are quadratic. (Received September 23, 2012)