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Primal-dual splitting algorithm for solving inclusions with mixtures of composite, Lipschitzian, and parallel-sum monotone operators

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We propose a primal-dual splitting algorithm for solving monotone inclusions involving a mixture of sums, linear compositions, and parallel sums of set-valued and Lipschitzian operators. An important feature of the algorithm is that the Lipschitzian operators present in the formulation can be processed individually via explicit steps, while the set-valued operators are processed individually via their resolvents. In addition, the algorithm is highly parallel in that most of its steps can be executed simultaneously. This work brings together and notably extends various types of structured monotone inclusion problems and their solution methods. The application to convex minimization problems is given special attention.

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