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Packing ellipsoids with overlap

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(Submitted on 1 Apr 2012)

The problem of packing ellipsoids of different sizes and shapes into an ellipsoidal container so as to minimize a measure of overlap between ellipsoids is considered. A bilevel optimization formulation is given, together with an algorithm for the general case and a simpler algorithm for the special case in which all ellipsoids are in fact spheres. Convergence results are proved and computational experience is described and illustrated. The motivating application - chromosome organization in the human cell nucleus - is discussed briefly, and some illustrative results are presented.

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