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**ISPAES: A new evolutionary algorithm for the optimization of one or many objective functions with constrains. (Un nuevo algoritmo evolutivo para la optimización de una o varias funciones objetivo sujetas a restricciones.)** (Spanish. English summary) [Zbl 1077.74038](#)

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Summary: We introduce a new evolutionary algorithm with constraint handling for single and multiple objective optimization. The proposed algorithm uses a grid to keep population diversity in a similar way PAES does it, but here the grid is adaptable, this is, its size changes accordingly to the constraints and adapts to the search space once the population reaches the feasible region. This adaptable mechanism has proven very powerful for approaching the true Pareto front, either in problems with one objective or many objectives with constraints. Several truss optimization problems subject to axial loads are solved to show the potential and robustness of the algorithm.

**MSC:**

- 74P10 Optimization of other properties in solid mechanics
- 74K10 Rods (beams, columns, shafts, arches, rings, etc.)
- 65K10 Numerical optimization and variational techniques
- 92D99 Genetics and population dynamics

**Keywords:**

Pareto front; truss optimization

**Software:**

ISPAES