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Direct plastic structural design under random strength and random load by chance constrained programming. (English) [Zbl 1478.74014](#)

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Summary: A new formulation to calculate shakedown limit load of structures under stochastic conditions of strength and loading is developed. Direct structural reliability design is based on the required failure probabilities by chance constrained programming, which is an effective approach of stochastic programming if it can be formulated as an equivalent deterministic optimization problem.

MSC:

- [74C05](#) Small-strain, rate-independent theories of plasticity (including rigid-plastic and elasto-plastic materials)
- [74E35](#) Random structure in solid mechanics
- [74S60](#) Stochastic and other probabilistic methods applied to problems in solid mechanics
- [90C15](#) Stochastic programming

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Keywords:

limit analysis; shakedown analysis; upper bound; lower bound; stochastic programming method; chance constrained programming; reliability

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