

**Briheche, Yann; Barbaresco, Frederic; Bennis, Fouad; Chablat, Damien**

**Branch-and-bound method for just-in-time optimization of radar search patterns.** (English)

Zbl 1436.90118

Bennis, Fouad (ed.) et al., Nature-inspired methods for metaheuristics optimization. Algorithms and applications in science and engineering. Cham: Springer. Model. Optim. Sci. Technol. 16, 465-488 (2020).

Summary: Set covering is a well-known problem in combinatorial optimization. The objective is to cover a set of elements, called the universe, using a minimum number of available covers. The theoretical problem is known to be generally NP-difficult to solve [*V. V. Vazirani*, Approximation algorithms. Berlin: Springer (2001)], and is often encountered in industrial processes and real-life problem. In particular, the mathematical formulation of the set cover problem is well-suited for radar search pattern optimization of modern radar systems.

For the entire collection see [[Zbl 1432.90007](#)].

**MSC:**

[90C27](#) Combinatorial optimization

[90C57](#) Polyhedral combinatorics, branch-and-bound, branch-and-cut

[90C59](#) Approximation methods and heuristics in mathematical programming

[90C90](#) Applications of mathematical programming

**Software:**

[CPLEX](#)

**Full Text:** [DOI](#)

**References:**

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- [2] Briheche Y, Barbaresco F, Bennis F, Chablat D, Gosselin F (2016) Non-uniform constrained optimization of radar search patterns in direction cosines space using integer programming. In: 2016 17th International Radar Symposium (IRS)
- [3] Yelbay B, Birbil Şİ, Bülbül K (2015) The set covering problem revisited: an empirical study of the value of dual information. *J Ind Manag Optim* 11(2):575-594 · [Zbl 1304.90182](#)
- [4] Matouek J, Gärtner B (2006) Understanding and using linear programming (universitext). Springer, New York/Secaucus
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