

DSS LUNCH SEMINAR

**DESIGNING SUSTAINABLE
DIET PLANS BY SOLVING
TRI-OBJECTIVE 0-1
PROGRAMS**

11th APRIL 2025

12.30 pm

ROOM 34

BUILDING CU002, FLOOR 04



Speaker

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Coautori

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"We present an algorithm for tri-objective nonlinear integer programs that combines the eps-constrained method with available oracles for biobjective integer programs.

We prove that our method is able to detect the nondominated set within a finite number of iterations. Specific strategies to avoid the detection of weakly non-dominated points are devised. The method is then used to determine the nondominated solutions of triobjective 0-1 models, built to design nutritionally adequate and healthy diet plans, minimizing their environmental impact.

The diet plans refer to menus for school cafeterias and we consider the carbon, water and nitrogen footprints as conflicting objectives to be minimized. Energy and nutrient contents are constrained in suitable ranges suggested by the dietary recommendation of health authorities. Results obtained on two models and on real world data are reported and discussed."



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**DIPARTIMENTO
DI SCIENZE STATISTICHE**