This document is an attachment of the papers:

* *Francesco Carrabs, Carmine Cerrone*, *Rosa Pentangelo,* **A multiethnic genetic approach for the minimum conflict weighted spanning tree problem,** Networks 2019.
* *Francesco Carrabs, Raffaele Cerulli*, *Rosa Pentangelo, Andrea Raiconi,* **Minimum spanning tree with conflicting edge pairs: a branch-and-cut approach,** Annals of Operations Research 2019.
* *Francesco Carrabs, Manlio Gaudioso,* **A Lagrangian approach for the Minimum Spanning Tree Problem with Conﬂicting Edge Pairs**, submitted to Networks (2020).

We document the file format of the instances. Files can be downloaded at http://www.dipmat2.unisa.it/people/carrabs/www/DataSet/CMST.zip

***Instance name***

The name of each file describes the characteristic of the instance. The name is composed of the prefix “CMST\_” followed by various numbers representing: the number of vertices (n), the number of edges (m), the number of conflicts (c) and the seed used to randomly generate the edges of graph and the edge pairs in conflict.

For instance, the file CMST\_25\_60\_500\_1.txt contains a graph with 25 vertices, 60 edges, 500 conflicts and the seed used is 1.

***Instance structure***

The first three lines report the number of nodes, edges and conflict of the instance.

The following *m* lines contain the list of edges in the following format:

< vertex-id > < vertex-id > < edge weight >

The remaining *c* lines contain the list of edges pair in conflict:

< vertex-id > < vertex-id > < vertex-id > < vertex-id >

***Other files***

The zip file contains even the instances proposed in:

R. Zhang, S.N. Kabadi, and A.P. Punnen. **The minimum spanning tree problem with conﬂict constraints and its variations**. Discrete Optimization (2011).

Finally, the osx executable of the Lagrangian approach is provided. The command to invoke is: *Lagrangian inputFile maxIterations epsilonValue*

For instance: ./*Lagrangian CMST\_25\_60\_18\_1.cms 500 0.1*