# On graphs with prescribed edge-lengths

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The literature is quite rich of attractive problems on graphs with prescribed edge-lengths, also in view of their link with many combinatorial topics. A special attention has been devoted, in particular, to a conjecture proposed by Marco Buratti in a private communication to Alex Rosa in 2007 and then generalized by Peter Horak and Alex Rosa himself: a multiset $L$ of $v-1$ positive integers not exceeding $\lfloor \frac{v}{2} \rfloor$ is the list of edge-lengths of a suitable Hamiltonian path of the complete graph on $\{0, 1, \ldots, v-1\}$ if and only if it contains at most $v-d$ multiples of any divisor $d$ of $v$.

The problem appears so challenging to the point where Alex Rosa defined it a "combinatorial disease" in his invited lecture at the international conference "Combinatorics 2008" held in June 2008 in Costermano (Italy).

In this talk I will focus on this conjecture and other related open problems.