AVVISO DI SEMINARIO

Mercoledì 22 Giugno 2005
alle ore 16.00
nella Sala Seminari del DISCo

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terrà un seminario dal titolo

Algorithms for protein similarity search under mRNA structure constraints

Abstract:

In the context of protein engineering, we consider the problem of computing an mRNA sequence of maximal similarity to a given mRNA (and consequently, to a given protein) that additionally satisfies some secondary structure constraints. This problem, called the MRSO problem, was introduced by Backofen et al. [STACS 2002].

Since the MRSO problem cannot be approximated efficiently, Bongartz [SOFSEM 2004] proposed to attack the problem using the concept of parameterized complexity. The idea is to provide optimal algorithms (thus exponential in time) for which the time complexity is exponential only in a parameter that we know is small in practice. We then say that the problem is Fixed-Parameter Tractable, or FPT.

In this talk, we will develop several such algorithms. In particular, we show that the problem is FPT, parameterized by:
1) the number of degree 3 vertices in the implied structure graph
2) the number of crossing edges in the implied structure graph
3) the similarity score that is requested.

This is a joint work with Guillaume Blin (LINA, Nantes), Danny Hermelin (University of Haifa) and Stéphane Vialette (Université Paris-Sud).