
Level of qualifications required : Graduate degree or equivalent
Fonction : PhD Position

About the research centre or Inria department
The Inria Sophia Antipolis - Méditerranée center counts 37 research teams and 9 support departments. The center's staff (about 600 people including 400 Inria employees) is composed of scientists of different nationalities (250 foreigners of 50 nationalities), engineers, technicians and administrators. 1/3 of the staff are civil servants, the others are contractual. The majority of the research teams at the center are located in Sophia Antipolis and Nice in the Alpes-Maritimes. Six teams are based in Montpellier and a team is hosted by the computer science department of the University of Bologna in Italy. The Center is a member of the University and Institution Community (ComUE) “Université Côte d’Azur (UCA)”.

Context
The Ph.D. will be done in the COATI team (Inria/I3S).
COATI (Combinatorics, Optimization, and Algorithms for Telecommunications) is a joint project-team between Inria Sophia Antipolis – Méditerranée and the I3S laboratory, which itself belongs to CNRS and University of Nice-Sophia Antipolis (UNS). Inside I3S, COATI belongs to the ‘équipe COMRED’, and within INRIA it belongs to the domain “Networks and Telecommunications”. The research fields include Algorithms, discrete mathematics and combinatorial optimisation; Algorithms for communications and Network design (optical WDM, MPLS, Backhaul, LTE, etc.).

web site: https://team.inria.fr/coati/

Assignment
The main research directions and objectives of the Ph.D. are to propose and evaluate new algorithms to actually (on real-instances large networks) compute or approximate good tree-decompositions. Short or middle terms objectives will be to pursue the study on treelength. More precisely,

- Study the computational complexity of treelength (or treebreadth) in the class of planar graphs.
- Propose better approximation algorithms for treelength or treebreadth in general graphs.
- Turn the result of [CDN16] into an algorithmical one (i.e., find an algorithm that, given a tree-decomposition with small length, computes one with small width).

Main activities

Skills
Prerequisites: strong knowledge in Algorithmics, graph theory, complexity, and Integer programming. Programming languages (Java, Python...) would be a plus.

Benefits package
- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave
- Flexible working hours
- Sports facilities

Remuneration
Duration: 36 months
Location: Sophia Antipolis, France
Gross Salary per month: 1982€ brut per month (year 1 & 2) and 2085€ brut/month (year 3)