

Théorie des AlgoRithmes : Machines, complétude et Axiomatisation et Contraintes physiques

Objectifs du projet:

- **Modélisation des algorithmes.** The theory of **Abstract State Machines** can be extended with subjects related to universality, relation with the Moschovakis model of algorithms and representation of other models of computation.
- **Complétude des modèles de calcul.** Is the ASM model the only operationally complete model? Other computational models (sequential and parallel) and programming languages can also allow a stepwise emulation of any algorithm. This will provide a theoretical foundation for **algorithmically-complete** programming languages or models of computation.
- **Aspects physiques des algorithmes classiques et quantiques.** To what extent can the sequential thesis be backed on physical arguments? On the one hand, arguments à la Gandy show that a small set of well-established postulates on physical ground is enough to justify the Church-Turing thesis. On the other hand, **quantum computing** introduces algorithms that are radically new.

TYPE DE PROJET: Blanc
 TYPE DE RECHERCHE: Fondamentale
 COUT COMPLET: 320.000€
 AIDE DE L'ANR: 320.000€
 DATE DE DEMARRAGE: 1 janvier 2013
 DUREE: 4 + 1
 SITE WEB:
<https://www.irif.fr/~yunes/TARMAC/>

Coordinateur du projet: P. Valarcher (UPEC)
 Partenaire 1: J.-B. Yunes (P7)
 Partenaire 2: P. Arrighi (INRIA)

