

## CIRRICULUM VITAE

First name : RIAHI  
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Born in Tunisia (Medjez El Bab),  
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### Academic training

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- 2008-2011            PhD in applied mathematics : Conception and analysis of time-parallelization schemes applied on evolutionary systems :  
Supervised by :(Pr) Yvon Maday & (Ass. Pr) Julien Salomon.  
*Jacques Louis Lions Laboratory, Paris France*
- 2007-2008            D.E.A (eq : master)- applied mathematics (Master EDPHAD) : Equations aux dérivées Partielles  
Modélisation Aléatoire et Déterministe.  
*Paris Dauphine university, Paris.*
- 2006-2007            Master thesis supervised by :(Pr) Gabriel Turinici and (Ass. Pr) Julien Salomon.  
Maîtrise(eq : M1) - Mathématiques : *Tunis El Manar II university, Tunis sciences faculty, Tunisia*

### Master thesis

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Titled : Conception and numerical simulation of a laser's control algorithm, application on quantum chemistry. The thesis is accomplished at INRIA (Paris) within MICMAC group projet.  
*INRIA Rocquencourt, Paris.*

### PhD Thesis

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- Titre :                **“Conception and analyze of time-parallel algorithm for evolutionary system : application on optimal contro, kinetic neuronc and nuclear magnetic resonance spectroscopy”.**  
*Thesis of Pierre et Marie Curie University (submitted dec 06-2011).*
- Abstract :            This thesis deals with parallel algorithms that processe time-parallelization of systems governed by evolutionary PDE. We first design a fully parallelized algorithm of parabolic optimal control problem. That process is the fruit of a new approach called intermediate target method, which we couple with parareal in time algorithm. This algorithm gives an impressive speed-up comparing with serial treatment. We apply second parareal in time algorithm on the neutron kinetic equation and we study the numerical convergence of the algorithm. Finally we propose a smooth parallel monotonic scheme for optimal design in RMN spectroscopy.  
Experiments are implemented using the MPI library on high performance machines
- Key-words :            Optimal control, partial differential equations, parareal in time algorithm, parallel computation, preconditioning, domain decomposition.

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**Reserch themes**

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Research themes : Optimal control, Convex optimization, Domain decomposition, Time parallelization, Numerical Analysis, Hight performance computing.  
Background : Functional analysis and partial differentials equations (linear or not), Matrix numerical analysis, Optimal control theory, Algebra, control of the heat equation, Iterative methods, Finite elements implementation, simulation of evolutionary equation (serial and parallel evolution).

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**Publications**

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**Journals :**

-Parareal-intermediate target approach to accelerate time parallelized parabolic optimal control problem, Y. Maday, M-K. Riahi and J. Salomon (In preparation)

-Time Parallelization of the Kinetic neutronic using parareal algorithm, A-M. Baudron, J-J. Lautard, Y. Maday, M-K. Riahi and J. Salomon (In preparation).

-Smooth parallel optimal design of 5-qbytes quantum information, M-K. Riahi, J. Salomon and D. Sugny (In progress).

**International Proceedings :**

-"An intermediate target method for the control of parabolic systems". Proceeding of TAMTAM 2011. Publié dans le CUP "centre de publication universitaire" ISBN 978-9973-37-662-6. TUNISIA (2011). Maday Y. Riahi M.-K., Salomon J.

-"Parareal-intermediate target approach to accelerate time parallelized parabolic optimal control problem(to appear in International Series of Numerical Mathematics (Birkhäuser, Basel)), Maday Y. Riahi M.-K., Salomon J.

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**Communications**

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**JLL-Laboratory work group :**

-GT LRC-Manon : France-Paris, France, Paris Avril-2012.  
-GT Graphics Processing Units. France, Paris Feb-2012  
-GT Graphics Processing Units. France, Paris Mars-2011  
-GTT groupe de travail des thésards .France, Paris Nov-2010

**Workshops and colloquiums :**

-Congrès CANUM, SMAI 2011 : France - Guidel Mai 23-2011.

**Conferences :**

- Trends in Applied Mathematics in Tunisia, Algeria, Morocco. Tunisia, Sousse 2011.  
- SMAI congres. France, Guidel 2011.

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**Computer skills**

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**Scientific computation** : Matlab/Octave, MatlabMPI, Scilab, FreeFem++(-nw/-mpi), Gnuplot, plot(Mac os x),...

**Text editing** :  $\LaTeX$ , Vim, Emacs, or windows editors..etc.

**Post-processing** : Bash, Python.

**Programming language** : C, C++.

**Systems** : Windows, Linux, Mac OS X.

**Parallelism** : OpenMP & MPI (Message Passing Interface).

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**Languages**

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Arab : mother-tongue.

French : bilingual.

English : read, talk, write.

German : learning

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**Extracurricular activities**

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Sport : martial arts (Kung-fu Whu-shu) competitive level, swimming..