

RAPPORT DE SOUTENANCE DE THESE

Signé par le président et contresigné par tous les membres du jury
(to be signed by the President of the jury and all the members)

Nom du candidat *Candidate (Last Name, First Name):* Pierre TAMAGNO

Titre de la thèse *Thesis title:* De la phénoménologie à la microscopie : une nouvelle approche pour l'évaluation des sections efficaces de fission

Date de la soutenance *date of the defense :* lundi 19 octobre 2015

Spécialité *Speciality :* Astrophysique, Plasma, nucléaire

Jury de soutenance *Defense jury:*

- Mme Héloïse GOUTTE, Docteur, CEA-DSM Saclay
- M. Mourad HAICHE, Maître de conférences, Université de Bordeaux, Directeur de thèse
- M. Arjan KONING, Professeur, NRG, Pays-bas
- M. Peter MOLLER, Docteur, Los Alamos National Laboratory (USA)
- M. Philippe QUENTIN, Professeur émérite, Université de Bordeaux
- M. Igor TSEKHANOVICH, Professeur, Université de Bordeaux

Nom du Président du jury *President of the jury (Last Name, First Name):* Igor Tsekhonovitch

Nom du rapporteur de soutenance (si différent du Président du jury)

Reviewer of the defense if isn't the president (Last Name, First Name):





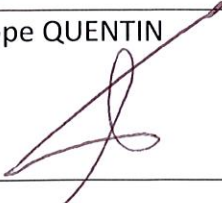

Evaluation générale de la thèse *General assessment of the thesis:* very good

Evaluation générale de la soutenance *General assessment of the defense:* very good

Aix-en-Provence Talence, le 19/10/2015

Signatures des membres du jury signatures of the jury members :

A partir du 1er janvier 2015, l'Université de Bordeaux ne délivre plus de mention au grade de docteur (CFVU du 11 décembre 2014)

Mme Héloïse GOUTTE 	M. Mourad HAICHE 	M. Arjan KONING 
M. Peter MOLLER 	M. Philippe QUENTIN 	M. Igor TSEKHANOVICH 

VU la délibération de la CFVU du 11 décembre 2014, l'Université de Bordeaux ne délivre plus de mention au grade de docteur à compter du 1er janvier 2015

Mr Pierre TAMGNO has presented to the international jury the essentials of his work entitled¹ "Challenging fission cross-section simulation with long standing micro-microscopic model of nucleus potential energy". Due to the presence in the jury of several foreign members the presentation has been held in English, which was also the language of communication with the jury.

Development of theoretical approaches and their implementation into the CEA computer code CONRAD allowing for calculations of the fission cross section of actinide nuclei in neutron-induced reactions was the theme of Mr Tamagno's PhD work and, consequently, of his presentation. Concerning the presentation itself, it has been thoroughly structured by the author, so that every further point was a logical consequence from the previously addressed one. The presentation was started from the current need of nuclear industry for high-quality nuclear data, with the main body of the talk subdivided onto several intermediate stages relevant to different processes involved, like scattering, neutron absorption followed or not by subsequent gamma-ray emission or fission. Every reaction stage was thoroughly addressed in the talk, with the attention given to the significant points. Nearly at every stage, several theoretical approaches were used by the author, who took care to justify their use and to explain the modifications made to the original approaches, if relevant. Finally, the presentation was finished with a comprehensive list of things-to-do, in order to increase the cross-section calculation precision.

During the discussion, which followed the presentation, Mr Tamagno has showed himself as one who really has a (nearly) expert knowledge in the field. This has been seen not only from the fact that he managed to answer practically all asked questions -- and this despite the variety of the model approaches that he used in his PhD work -- but first of all from his capacity to distance himself from the question, to better understand its essence and thus to give an exhaustive answer. The jury wants to emphasize this fact, which is unusual for a PhD student with just 3 years of experience in the field. The jury wants to comment on the amount of work made by the author during these 3 years, which is vast and exceeds by far frames of a "standard" PhD thesis work.

In conclusion, taking into account the quality of the PhD work, as stated in the reports on the PhD manuscript, taken together with the excellence in the subject of the candidate as demonstrated during the thesis defence, the jury was unanimous in his decision to award a Doctoral title to Mr Pierre TAMAGNO.



¹ Titre en Français « De la phénoménologie à la microscopie: une nouvelle approche pour l'évaluation des sections efficaces de fission ».