

# Nuclear pair correlations probed via proton-induced transfer and knock-out reactions

Workshop of the *Espace de Structure Nucléaire Théorique*

Talks : 6-8<sup>th</sup> February, 2013

CEA, IRFU, SPhN, Orme des Merisiers, blg. 703, rooms 125-135, F-91191 Gif-sur-Yvette Cedex

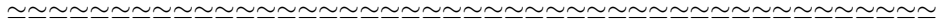
+      Web site: <http://esnt.cea.fr/>    Ateliers 2013 >> Février      +

During this workshop, we plan to discuss the recent progress and remaining issues with existing reaction theory frameworks for knock-out and pair transfer reactions on proton targets.

**PROGRAM** Last update : 4<sup>th</sup> Feb.

| Wednesday 6 <sup>th</sup> Feb                 | Thursday 7 <sup>th</sup>                             | Fri. 8 <sup>th</sup>              |
|-----------------------------------------------|------------------------------------------------------|-----------------------------------|
| room 135                                      | room 125                                             | room 125                          |
| 09h00 ( <i>day plans</i> )                    | 09h00 ( <i>day plans</i> )                           | 09h00 ( <i>day plans</i> )        |
| 09h30 V. Lapoux                               | 09h30 T. Duguet                                      | 09h30 A. Moro                     |
| 10h10 A. Corsi                                | 10h10 A. Signoracci                                  | 10h10 <b>Break</b>                |
| 10h50 <b>Break</b>                            | 10h50 <b>Break</b>                                   | 10h20 K Ogata (II)                |
| 11h10 N. Keeley                               | 11h10 N. Pillet                                      | 11h10 <i>Discussions</i>          |
| 11h50 <i>CRC/DWBA frameworks</i>              | 11h50 ( <i>test</i> <sup>68-76</sup> Ge(p,t))        | <i>break-up effects</i>           |
| 12h15 <b>Lunch</b>                            | 12h30 <b>Lunch</b>                                   | 12h00 <b>Lunch</b>                |
| 14h00 R. Broglia*                             | 14h00 M. Dupuis                                      | 13h30 <i>discussions</i>          |
| 14h40 D. Lacroix                              | 14h40 J. Le Bloas                                    | <i>pair transfer</i>              |
| 15h20 M. Grasso                               | 15h20 K Ogata (I)                                    | and (p,t) reactions               |
| 16h00 <b>Break</b>                            | 16h10 <b>Break</b>                                   | 16h00 <b>Break</b>                |
| 16h20 F. Barranco                             | 16h30 T. Noro                                        | 16h15 <i>Outlook</i> :            |
| 17h00 E. Vigezzi                              | 17h20 G. Potel                                       | <i>pair transfer,</i>             |
| 17h40 S. Péru                                 | 18h00 <i>Discussions</i>                             | <i>(p,t) and (p,pN) reactions</i> |
| 18h20 <i>Discussions</i>                      | <i>DWIA frameworks</i>                               | <i>Workshop outputs</i>           |
| <i>CRC and 2-step</i>                         | <i>Test cases</i> : <sup>16,18</sup> O(p,2p)         | 16h45 <i>Test cases</i>           |
| 18h40 <i>Test case</i> : <sup>8</sup> He(p,t) | <i>Test</i> : <sup>40</sup> Ca(p,2p) <sup>39</sup> K | <sup>16-24</sup> O(p,pN)          |
| 19h30 <b>End</b>                              | 19h30 <b>End</b>                                     | 18h00 <b>End</b>                  |

Note : \* The talk initially scheduled to be given by R. Broglia will be given by G. Potel.



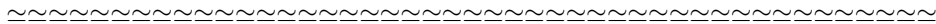
## LIST OF TALKS

*Talks introducing the workshop (Experimental overview, needs and questions) :*

- Anna-Maria Corsi, CEA, IRFU, SPhN, "*Experimental studies of shell effects via (p,2p) and (p,pn) reactions*"
- Valérie Lapoux, CEA, IRFU, SPhN, "*Nuclear structure of exotic nuclei probed via direct reactions on proton target*"

*Talks about microscopic form factors, structure inputs and reaction frameworks :*

- Nicholas Keeley (*Nicholas.Keeley@fuw.edu.pl*), National Centre for Nuclear Research, Warsaw, "*(p,t) transfer reactions studied in Coupled reaction channel framework*"
- Ricardo A. Broglia (*ricardo.broglia@mi.infn.it*), INFN-Milano, "*Pairing correlations, 2-step applied to transfer reactions*"
- Denis Lacroix (*lacroix@ganil.fr*), GANIL, "*Effect of collective and non-collective pairing excitation in transfer reaction near the Coulomb barrier*"
- Marcella Grasso (*grasso@ipno.in2p3.fr*), IPN-Orsay, "*Low-energy excitations and pair transfer of exotic nuclei*"
- Francesco Barranco (*barranco@cica.es*), Univ. de Sevilla, "*Interplay of collective and single particle modes in the structure of exotic nuclei*"
- Enrico Vigezzi (*enrico.vigezzi@mi.infn.it*), INFN-Milano, "*Induced interaction and pairing in nuclei*"
- Sophie Péru (*sophie.peru-desenfants@cea.fr*), CEA, DAM, DIF, "*Excitations and QRPA calculations*"
- Angelo Signoracci (*angelo.signoracci@cea.fr*), CEA, IRFU, SPhN, "*Correlations and spectroscopic factors*"
- Thomas Duguet (*thomas.duguet@cea.fr*), CEA, IRFU, SPhN, "*Effective single-particle energies in correlated many-fermion systems : meaning and usefulness*"
- Nathalie Pillet (*nathalie.pillet@cea.fr*), CEA, DAM, DIF, "*Nuclear form factors with multi-particle multi-hole configurations*"
- Marc Dupuis (*marc.dupuis@cea.fr*), CEA, DAM, DIF, "*G-matrix microscopic optical model potential calculations and structure inputs*"
- Julien Le Bloas (*julien.lebloas@cea.fr*), CEA, DAM, DIF, "*Description of light nuclei ( $8 < Z < 20$ ,  $8 < N < 20$ ) with the mp-mh Gogny energy density functional*"
- Kazuyuki Ogata (*kazuyuki@rcnp.osaka-u.ac.jp*), RCNP Osaka, I. "*CDCC methods*"
- Tetsuo Noro (*noro@nucl.phys.kyushu-u.ac.jp*), Kyushu University, "*Single particle properties investigated via (p,2p) reactions*"
- Grégory Potel (*gregory.potel@cea.fr*), CEA, IRFU, SPhN, "*Nuclear structure via proton-induced knock-out - development of a multi-step finite-range DWIA code*"
- Antonio Moro (*moro@us.es*), Facultad de Física, Univ. de Sevilla, "*Core excitation in transfer and break-up reactions*"
- Kazuyuki Ogata RCNP Osaka, II. "*Status of breakup reaction theory*".



### Contact at CEA-Saclay, SPhN

*If you are interested in attending the workshop, please send an e-mail to the organizers :*  
*Anna-Maria Corsi, Valérie Lapoux, Grégory Potel ;*  
*e-mails : [acorsi@cea.fr](mailto:acorsi@cea.fr) ; [vlapoux@cea.fr](mailto:vlapoux@cea.fr) ; [gregory.potel@cea.fr](mailto:gregory.potel@cea.fr)*