

List of publications of ESNT from 2004 to 2020

Publications based on works performed by physicists in the framework of the ESNT projects during their stays as visitors at CEA (in bold the one(s) directly involved as a long-stay visitor or post-doc at ESNT when the paper is prepared). These publications include directly a reference to the ESNT framework and an acknowledgement for the support.

Liste des publications

(comportant une référence à l'ESNT, **ex** : *acknowledgements ou affiliation CEA, ESNT du post-doc* (fiche actualisée sur le site Web <http://esnt.cea.fr/index.php?id=10&ref=1>)

2020

◆ *Alpha-particle condensation: A nuclear quantum phase transition*,
J.-P. Ebran, M. Girod, E. Khan, **R.-D. Lasserri**, and P. Schuck
Phys. Rev. C **102**, 014305 (2020).doi:10.1103/PhysRevC.102.014305

◆ *Microscopic description of the self-conjugate ^{108}Xe and ^{104}Te alpha-decay chain*,
F. Mercier, J. Zhao, **R.-D. Lasserri**, J.-P. Ebran, E. Khan, T. Nikšić, and D. Vretenar,
Phys. Rev. C **102**, 011301(R) (2020).doi:10.1103/PhysRevC.102.011301

◆ *Novel chiral Hamiltonian and observables in light and medium-mass nuclei*,
V. Somà, P. Navrátil, **F. Raimondi**, C. Barbieri, and T. Duguet,
Phys.Rev. C **101**, 014318 (2020). doi: 10.1103/PhysRevC.101.014318

◆ *Taming Nuclear Complexity with a Committee of Multilayer Neural Networks*
R.-D. Lasserri, D. Regnier, J.-P. Ebran, and A. Penon
Phys. Rev. Lett. **124**, 162502 (2020). doi:10.1103/PhysRevLett.124.162502

◆ *Restoration of the Natural $E(1/2+1) - E(3/2+1)$ Energy Splitting in Odd- K Isotopes Towards $N = 40$* ,
Y.L. Sun, A.Obertelli, P.Doornenbal, C.Barbieri, Y.Chazono, T.Duguet, H.N.Liu, P.Navratil, F.Nowacki,
K.Ogata, T.Otsuka, **F.Raimondi**, V.Soma, Y.Utsuno, K.Yoshida, N.Achouri, H.Baba, F.Browne, D.Calvet,
F.Chateau, S.Chen, N.Chiga, A.Corsi, M.L.Cortes, A.Delbart, J.-M.Gheller, A.Giganon, A.Gillibert, C.Hilaire,
T.Isobe, T.Kobayashi, Y.Kubota, V.Lapoux, T.Motobayashi, I.Murray, H.Otsu, V.Panin, N.Paul,
W.Rodriguez, H.Sakurai, M.Sasano, D.Steppenbeck, L.Stuhl, Y.Togano, T.Uesaka, K.Wimmer, K.Yoneda,
O.Aktas, T.Aumann, L.X.Chung, F.Flavigny, S.Franchoo, I.Gasparic, R.-B.Gerst, J.Gibelin, K.I.Hahn, D.Kim,
T.Koiwai, Y.Kondo, P.Koseoglou, J.Lee, C.Lehr, B.D.Linh, T.Lokotko, M.MacCormick, K.Moschner,
T.Nakamura, S.Y.Park, D.Rossi, E.Sahin, D.Sohler, P.-A.Soderstrom, S.Takeuchi, H.Tornqvist, V.Vaquero,
V.Wagner, S.Wang, V.Werner, X.Xu, H.Yamada, D.Yan, Z.Yang, M.Yasuda, L.Zanetti
Phys.Lett.B **802**,135215 (2020). 10.1016/j.physletb.2020.135215

◆ *In-beam gamma-ray and electron spectroscopy of $^{249,251}\text{Md}$*
R. Briselet, Ch. Theisen, B. Sulignano, M. Airiau, K. Auranen, D. M. Cox, F. Déchery, A. Drouart, Z. Favier,
B. Gall, T. Goigoux, T. Grahn, P. T. Greenlees, K. Hauschild, A. Herzan, R.-D. Herzberg, U. Jakobsson, R.
Julin, S. Juutinen, J. Konki, M. Leino, A. Lopez-Martens, A. Mistry, P. Nieminen, J. Pakarinen, P.
Papadakis, P. Peura, P. Rahkila, J. Rubert, P. Ruotsalainen, M. Sandzelius, J. Sarén, C. Scholey, J. Sorri, S.
Stolze, J. Uusitalo, M. Vandebrouck, A. Ward, M. Zielinska, **B. Bally**, M. Bender, W. Ryssens,
Phys. Rev. C **102**, 014307 (2020). doi: 10.1103/PhysRevC.102.014307

- ◆ *Quasifree Neutron Knockout from ^{54}Ca Corroborates Arising $N=34$ Neutron Magic Number*, S. Chen, J. Lee, P. Doornenbal, A. Obertelli, C. Barbieri, Y. Chazono, P. Navrátil, K. Ogata, T. Otsuka, **F. Raimondi**, V. Somà, Y. Utsuno, K. Yoshida, H. Baba, F. Browne, D. Calvet, F. Château, N. Chiga, A. Corsi, M.L. Cortés, A. Delbart, J.-M. Gheller, A. Giganon, A. Gillibert, C. Hilaire, T. Isobe, J. Kahlbow, T. Kobayashi, Y. Kubota, V. Lapoux, H. N. Liu, T. Motobayashi, I. Murray, H. Otsu, V. Panin, N. Paul, W. Rodriguez, H. Sakurai, M. Sasano, D. Steppenbeck, L. Stuhl, Y.L. Sun, Y. Togano, T. Uesaka, K. Wimmer, K. Yoneda, et al., Phys. Rev. Lett. 123, 142501 (2019). doi:10.1103/PhysRevLett.123.142501
- ◆ *Core-polarization effects and effective charges in O and Ni isotopes from chiral interactions*, **F. Raimondi**, C.Barbieri, Phys. Rev. C 100, 024317 (2019). doi: 10.1103/PhysRevC.100.024317
- ◆ *Nuclear electromagnetic dipole response with the self-consistent Green's function formalism* **F.Raimondi**, C.Barbieri, Phys. Rev. C 99, 054327 (2019). doi: 10.1103/PhysRevC.99.054327
- ◆ *Pre-processing the nuclear many-body problem: Importance truncation versus tensor factorization techniques*, **A. Tichai**, J. Ripoche, T. Duguet, Eur. Phys. J. A 55 : 90 (2019). doi:10.1140/epja/i2019-12758-6
- ◆ *Natural orbitals for ab initio no-core shell model calculations*, **A. Tichai**, J. Müller, K. Vobig, R. Roth, Phys. Rev. C 99, 034321 (2019). doi:10.1103/PhysRevC.99.034321
- ◆ *Tensor-decomposition techniques for ab initio nuclear structure calculations: from chiral nuclear potentials to ground-state energies*, **A. Tichai**, R. Schutski, G. E. Scuseria, T. Duguet, Phys. Rev. C 99, 034320 (2019). doi:10.1103/PhysRevC.99.034320
- ◆ *ADG: Automated generation and evaluation of many-body diagrams, I. Bogoliubov many-body perturbation theory*, P. Arthuis, T. Duguet, **A. Tichai**, R.-D. Lasserri, J.-P. Ebran, Comp. Phys. Comm. 240: 202-227 (2019) arXiv :1809.01187
- ◆ *Normal-ordered k-body approximation in particle-number-breaking theories*, J. Ripoche, **A. Tichai**, T. Duguet, arXiv :1908.00765 (submitted to Eur. Phys. J. A, 2019)
- ◆ *Many-body perturbation theories for finite nuclei*, **Alexander Tichai**, Robert Roth, Thomas Duguet, contribution to 'Frontiers in Physics' arXiv:2001.10433 [nucl-th]

2018

- ◆ *Mean-field approach to reconstructed neutrino energy distributions in accelerator-based experiments*, A. Nikolakopoulos, M. Martini, M. Ericson, N. Van Dessel, R. González-Jiménez, and N. Jachowicz Phys. Rev. C **98**, 054603 (2018). doi:10.1103/PhysRevC.98.054603
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- ◆ *Bogoliubov many-body perturbation theory for open-shell nuclei*, A. **Tichai**, P. Arthuis, T. Duguet, V. Somà, H. Hergert, R. Roth, Phys. Lett. B **786**, 195-200 (2018). arXiv :1806.10931, doi:10.1016/j.physletb.2018.09.044

- ◆ *Open-Shell Nuclei from No-Core Shell Model with Perturbative Improvement*, A. **Tichai**, E. Gebrerufael, K. Vobig, R. Roth, Phys. Lett. B **786**, 448-452 (2018). arXiv :1703.05664, doi:10.1016/j.physletb.2018.10.029

- ◆ *Norm overlap between many-body states: Uncorrelated overlap between arbitrary Bogoliubov product states*, B. **Bally**, T. Duguet, Phys. Rev. C **97**, 024304 (2018). arXiv: 1704.05324, doi : 10.1103/PhysRevC.97.024304

- ◆ *Neutrino-nucleus cross sections and oscillation experiments*, T. Katori, M. **Martini**, J.Phys. G **45**, 013001 (2018). arXiv:1611.07770v1

- ◆ *NuSTEC White Paper: Status and Challenges of Neutrino-Nucleus Scattering*, L. Alvarez-Ruso, M. Sajjad Athar, M.B. Barbaro, D. Cherdack, M.E. Christy, P. Coloma, T.W. Donnelly, S. Dytman, A. de Gouvea, R.J. Hill, P. Huber, N. Jachowicz, T. Katori, A.S. Kronfeld, K. Mahn, M. **Martini**, J.G. Morfin, J. Nieves, G. Perdue, R. Petti, D.G. Richards , F. Sanchez, T. Sato, J.T. Sobczyk, G.P. Zeller, *Progress in Particle and Nuclear Physics* **100**, 1 (2018). arXiv:1706.03621 ; doi:10.1016/j.pnnp.2018.01.006

- ◆ *De-excitation of the strongly coupled band in ^{177}Au and implications for core intruder configurations in the light Hg isotopes*, M. Venhart, F. A. Ali, W. Ryssens, J. L. Wood, D. T. Joss, A. N. Andreyev, K. Auranen, **B. Bally**, M. Balogh, M. Bender, et al., Phys. Rev. C **95**, 061302(R) (2017). doi: 10.1103/PhysRevC.95.061302
- ◆ *Unexpected high-energy γ emission from decaying exotic nuclei*, A. Gottardo, D. Verney, I. Deloncle, S. Peru, C. Delafosse, S. Roccia, I. Matea, C. Sotty, C. Andreoiu, C. Costache, M.-C. Delattre, A. Etile, S. Franchoo, C. Gaulard, J. Guillot, F. Ibrahim, M. Lebois, M. MacCormick, N. Marginean, R. Marginean, **M. Martini**, C. Mihai, I. Mitu, L. Olivier, C. Portail, L. Qi, B. Roussiere, L. Stan, D. Testov, J. Wilson, D. T. Yordanov, Phys. Lett. B **772**, 359 (2017). doi: 10.1016/j.physletb.2017.06.050
- ◆ *Electromagnetic dipole and Gamow-Teller responses of even and odd $^{90-94}_{40}\text{Zr}$ isotopes in QRPA calculations with the D1M Gogny force*, I. Deloncle, S. Péru, **M. Martini**, Eur. Phys. J. A, **53** 8 (2017) 170. doi: 10.1140/epja/i2017-12354-x
- ◆ *E1 and M1 strength functions from Average Resonance Capture data*, J. Kopecky, S. Goriely, S. Péru, S. Hilaire, **M. Martini**, Phys. Rev. C **95**, 054317 (2017). doi: 10.1103/PhysRevC.95.054317
- ◆ *Are there Signatures of Harmonic Oscillator Shell Gaps Far From Stability? – First Spectroscopy of ^{110}Zr* , N. Paul, A. Corsi, A. Obertelli, P. Doornenbal, G. Authélet, H. Baba, **B. Bally**, M. Bender, D. Calvet, F. Château, S. Chen, J.-P. Delaroche, A. Delbart, J.-M. Gheller, A. Giganon, A. Gillibert, M. Girod, P. H. Heenen, V. Lapoux, J. Libert, T. Motobayashi, M. Niikura, T. Otsuka, T. R. Rodríguez, J. Y. Roussé, H. Sakurai, C. Santamaria, N. Shimizu, D. Steppenbeck, R. Taniuchi, T. Togashi, Y. Tsunoda, T. Uesaka, et al., Phys. Rev. Lett. **118**, 032501 (2017). doi: 10.1103/PhysRevLett.118.032501
Article of experimentalists from the SPhN LENA group in collaboration with theorists.
- ◆ *Beyond-mean-field correlations and the description of superheavy elements*, Paul-Henri Heenen, Benjamin Bally, Michael Bender and Wouter Ryssens, Nobel Symposium NS 160 – Chemistry and Physics of Heavy and Superheavy Elements, EPJ Web of Conferences **131**, 02001 (2016). <https://doi.org/10.1051/epjconf/201613102001>
- ◆ *Modeling the double charge exchange response function for a tetraneutron system*, R. Lazauskas, J. Carbonell, and E. Hiyama, Prog. Theor. Exp. Phys. 073D03 (2017). <https://doi.org/10.1093/ptep/ptx078>
Works partly done during the ESNT workshops organized in 2016 and 2017 “Computation of three- and four-neutron resonances” and “Dynamics of highly unstable exotic light nuclei and few-body systems”. (acknowledgements for the ESNT support).

- ◆ *Radii and binding energies in oxygen isotopes: a challenge for the nuclear forces.*
V. Lapoux, V. Somà, C. Barbieri, H. Hergert, J. D. Holt, R. Stroberg,
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- ◆ *On the possibility of generating a 4-neutron resonance with a $T=3/2$ isospin 3-neutron force,*
J. Carbonell, E. Hiyama, R. Lazauskas, M. Kamimura, Phys. Rev. C **93**, 044004 (2016). *Works done partly during the ESNT workshop in October 2015, "Computation of three- and four-neutron resonances".*
- ◆ *Low-energy modification of the γ strength function of the odd-even nucleus ^{115}In ,*
M. Versteegen, D. Denis-Petit, V. Méot, Th. Bonnet, M. Comet, F. Gobet, F. Hannachi, M. Tarisien, P. Morel, **M. Martini**, and S. Péru, Phys. Rev. C **94**, 044325 (2016).
- ◆ *Gogny-Hartree-Fock-Bogolyubov plus quasiparticle random-phase approximation predictions of the $M1$ strength function and its impact on radiative neutron capture cross section,*
S. Goriely, S. Hilaire, S. Péru, **M. Martini**, I. Deloncle and F. Lechaftois, Phys. Rev. C **94**, 044306 (2016).
- ◆ *Nuclear response functions with finite range Gogny force: tensor terms and instabilities,*
A. De Pace and **M. Martini**, Phys. Rev. C **94**, 024342 (2016).
- ◆ *Large-scale deformed quasiparticle random-phase approximation calculations of the γ -ray strength function using the Gogny force,* **M. Martini**, S. Péru, S. Hilaire, S. Goriely and F. Lechaftois,
Phys. Rev. C **94**, 014304 (2016).
- ◆ *Emission of neutron-proton and proton-proton pairs in electron scattering induced by meson-exchange currents,* I. Ruiz Simo, J.E. Amaro, M.B. Barbaro, A. De Pace, J.A. Caballero, G.D. Megias, T.W. Donnelly,
Phys. Rev. C **94**, 054610 (2016); doi: [10.1103/PhysRevC.94.054610](https://doi.org/10.1103/PhysRevC.94.054610)
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- ◆ *The impact of low-energy nuclear excitations on neutrino-nucleus scattering at MiniBooNE and T2K kinematics,* V. Pandey, N. Jachowicz, **M. Martini**, R. González-Jiménez, J. Ryckebusch, T. Van Cuyck and N. Van Dessel, Phys. Rev. C **94**, 054609 (2016).
- ◆ *Influence of short-range correlations in neutrino-nucleus scattering,*
T. Van Cuyck, N. Jachowicz, R. González-Jiménez, **M. Martini**, V. Pandey, J. Ryckebusch and N. Van Dessel, Phys. Rev. C **94**, 024611 (2016).
- ◆ *Electron-neutrino scattering off nuclei from two different theoretical perspectives,*
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- ◆ *Assessing the role of nuclear effects in the interpretation of the MiniBooNE low-energy anomaly,*
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V. Somà, T. Duguet, C. Barbieri, J. Phys. Conf. Ser. **337** (2012) 012001.

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A. Rios, **V. Somà**, Phys. Rev. Lett. **108**, 012501 (2012).

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◆ *Neutrinoless double beta decay studied with configuration mixing methods*,
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M. Bender, T. Duguet, D. Lacroix, Phys. Rev. C **79**, 044319 (2009).
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- ◆ *Up-to N3LO heavy-baryon chiral perturbation theory calculation for the M1 properties of three-nucleon systems*, Y-Ho Song, **R. Lazauskas**, and T-S Park, Phys. Rev. C **79**, 064002 (2009).
- ◆ *Critical temperature for α -particle condensation within a momentum-projected mean-field approach*,
T. Sogo, **R. Lazauskas**, G. Röpke, and P. Schuck, Phys. Rev. C **79**, 051301 (2009).
- ◆ *Density matrix renormalization group approach to two-fluid open many-fermion systems*,
J. Rotureau, **N. Michel**, W. Nazarewicz, M. Płoszajczak, and J. Dukelsky,
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- ◆ *Shell model in the complex energy plane*
N. Michel, W. Nazarewicz, M. Płoszajczak..., J. Phys. G:Topical Review, **36**, 013101 (2009).
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- ◆ *Evolution of nuclear shapes in medium mass isotopes from a microscopic perspective*, L. M. Robledo, **R. Rodríguez -Guzman**, P. Sarriguren, Phys. Rev. C **78**, 034314 (2008).
- ◆ *Configuration mixing of angular-momentum and particle-number projected triaxial Hartree-Fock-Bogoliubov states using the Skyrme energy density functional*, **M. Bender** and P.-H. Heenen, Phys. Rev. C **78**, 024309 (2008).
- ◆ *Effective shell model Hamiltonians from density functional theory: Quadrupolar and pairing correlations*, **R. Rodríguez -Guzman**, Y. Alhassid, G.F. Bertsch, Phys. Rev. C **77**, 064308 (2008).
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- ◆ *New efficient method for performing Hartree-Fock-Bogoliubov calculations for weakly bound nuclei*, M. Stoitsov, **N. Michel**, and K. Matsuyanagi, Phys. Rev. C **77**, 054301(2008).

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