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## 1. Recherche et production scientifiques

### PHYSIQUE DU NEUTRINO

- Physique des hautes énergies, du **neutrino**, des astroparticules.
- **Oscillations de neutrinos** sur et hors accélérateurs.
- Développements instrumentaux : acquisition de données sur réseau (**e-DAQ**), R&D opto-électronique (HPD, MaPMT, SiPM, smart sensors), TPC argon liquide.
- Membre des collaborations internationales :
  - **OPERA-CNGS1** (2003-2013, Europe) [**OPERA 1-24**] : oscillations  $\nu_\mu \rightarrow \nu_\tau$  CERN - LNGS (730km);
  - **T2K** (2008-, Japon) [**T2K 1-25**] : oscillations  $\nu_\mu \rightarrow \nu_e$  /  $\bar{\nu}_\mu \rightarrow \bar{\nu}_e$  et  $\nu_\mu \rightarrow \nu_\tau$  J-PARC - Super-Kamiokande (250km), mesure de  $\theta_{13}$  ;
  - **LAGUNA-LBNO** (2010-2014) [**LAG 1-7**] : design study (FP7) optimisant la recherche de la violation CP et la mesure de la hiérarchie de masse dans les oscillations  $\nu_\mu \rightarrow \nu_e$  CERN - Pyhäsalmi (2300km) ;
  - **WA105** (depuis 2015) [**LAG 5**] : test faisceau @ CERN ; prototype de TPC double phase ; R&D LBNO/DUNE ;
  - **DUNE-LBNF** (depuis 2015, Etats-Unis) : oscillations  $\nu_\mu \rightarrow \nu_e$  /  $\bar{\nu}_\mu \rightarrow \bar{\nu}_e$  Fermilab - SURF (Sanford Underground Research Facility, 1300km), désintégration proton, supernovae. *Conceptual Design Report* (CDR) en cours.

### IMAGERIE / TOMOGRAPHIE

- Application des méthodes de détection HEP à l'**imagerie médicale** et à la **tomographie par muons des structures géologiques**.
- R&D détecteurs à scintillation organique et non-organique ; opto-électronique.
- Applications en volcanologie, génie civil, archéologie ; analyse des structures souterraines pour le stockage à long terme.
- Membre des collaborations :
  - **CLEAR-PET** / Crystal Clear (2001-2004) [**TD 1-3**] : tomographie par émission de positrons (TEP) appliquée au petit animal ;
  - **DIAPHANE** (depuis 2008, IN2P3/INSU) [**TD 4-19, TD 1p-6p**] : tomographie par muons de structures géophysiques ; volcans actifs (petites Antilles, Etna, Mayon) ; **ANR** DOMOSCAN (2008-2012) puis DIAPHANE (2014-2018) ; collaborations : IRSN, CETU, INGV, EOS-Phivolcs, Swisstopo

### PHYSIQUE THEORIQUE

- **Interactions neutrino-matière**. Modélisation des effets nucléaires collectifs (RPA). Approximation de densité locale du gaz de Fermi. Modélisation des excitations **np-nh**.
- **Sections efficaces neutrino-noyau** [**TH 1-11**]. Comparaison *data/modèle* (Miniboone, T2K, Minerva, Microboone). Implications dans l'analyse des oscillations de neutrinos (anomalie Miniboone).

## 2. Livres d'enseignement publiés

### Correction des épreuves écrites du CAPES et de l'Agrégation

[L1] *Problèmes corrigés de physique 2000-2005. CAPES externe. Agrégation de chimie*, Marteau, J., Marteau-Bazouni, K., Bréal, ISBN 2 74 95 0509 7.

[L2] *Problèmes corrigés de physique 2000-2010. CAPES et Agrégation de sciences physiques*, Marteau, J., Marteau-Bazouni, K., Bréal, ISBN 978 2 7495 1007 1.

### Manuel de cours, classes préparatoires 1<sup>ère</sup> & 2<sup>ème</sup> année

[L3] *Tout-en-un de physique, MPSI, PCSI, PTSI* (2013) Marteau, J. et al, Bréal, Réf. 209 0375 - ISBN 978 2 7495 3216 5. Edition 2013 - 772 pages. Rédacteur en chef.

[L4] *Tout-en-un de physique MP, MP\** (2014) Marteau, J., et al, Bréal, ISBN 978 2 7495 3311 7. Edition 2015 - 630 pages.

[L5] *Tout-en-un de physique PC, PC\** (2014) Marteau, J., et al, Bréal, ISBN 978 2 7495 3312 4. Edition 2015 - 773 pages.

**3. Brevets déposés**

**Brevet sur les systèmes d'acquisition e-DAQ intelligents**

[B1] *Installation de capteurs intelligents pour l'acquisition à haut débit de données via le réseau Ethernet*, brevet n°04 00468 (délivrance n°06/16 du 21.04.06).  
Licence cédée à un partenaire industriel (11.08) : *Société LEAS, ZA la Bâtie, 38330 SAINT ISMIER*

**Brevet sur les protocoles Ethernet synchrones**

[B2] *Procédé de synchronisation temporelle. Equipements principal et secondaire pour la mise en œuvre de ce procédé, procédé de fonctionnement de ces équipements principal et secondaire*, brevet n° 08 57227 (soumission 1000039837 24.10.08).

**Brevet sur la tomographie par muons appliquée aux tunnels**

[B3] *Procédé et appareillage de reconnaissance des variations de densité des terrains par télescope à muons – Méthode géophysique par tomographie muonique*, brevet PDS – CNRS – Université de Lyon, n° 15 02203, déposé le 20.10.2015.

**4. Actions de communication grand public**

*[Hors séminaires grand public, cafés des sciences, fête de la science, actions de communication dans les lycées, articles dans les quotidiens locaux.]*

**Articles/vidéos grand public sur la tomographie muons**

[GP 1] *Projet Diaphane : radiographier les volcans avec les rayons cosmiques*, Marteau, J., Gibert, D., Journal du CNRS n°255 – avril 2011.

[GP 2] *Les volcans sous l'oeil des muons cosmiques*, Lesparre, N., Gibert, D., Marteau, J., [lemonde.fr/2012/11/15](http://lemonde.fr/2012/11/15).

[GP 3] *Radiographier les volcans avec les rayons cosmiques*, Gibert, D., Marteau-Bazouni, K., Marteau, J., *Reflets de la Physique* n°32 – janvier/février 2013.

[GP 4] *Volcans : percés à jour par les rayons cosmiques*, *Science et vie* n°1144 – janvier 2013.

[GP 5] *Sonder les volcans avec des rayons cosmiques*, Lesparre, N., Gibert, D., Marteau, J., *Pour la science* n°434 – décembre 2013.

**Vidéos grand public sur la physique des neutrinos**

[GP 6] Interview TLM (2000) sur l'expérience OPERA.

[GP 7] Interview Cité des Sciences ([SciencesActualités.fr](http://SciencesActualités.fr)), le 21/10/2011, "Retour sur les neutrinos plus rapides que la lumière".

## 5. Annexe: liste des publications [93 références]

[R : revues internationales à comité de lecture : 68 réf.

C : actes de conférences nationales et internationales : 12 réf.

P : posters : 6 réf.

E : experimental proposal : 7 réf.]

E-[OPERA 1] *An appearance experiment to search for  $\nu_\mu \rightarrow \nu_\tau$  oscillations in the CNGS beam: experimental proposal*, M.Guler et al (OPERA collaboration), CERN-SPSC-2000-028; SPSC-P-318; LNGS-P-25-2000, LYCEN 2000-165.

E-[OPERA 2] *Status report on the OPERA experiment*, M.Guler et al, OPERA Collaboration, Aug 2001, CERN-SPSC-2001-025, CERN-SPSC-M-668, LNGS-EXP-30-2001-ADD-1.

R-[OPERA 3] *Large liquid-scintillator trackers for neutrino experiments*, L. Benussi, N. Bruski, N. D'Ambrosio, Y. Declais, J. Dupraz, J.P. Fabre, V. Fanti, E. Forton, D. Frekers, A. Frenkel et al. NIM A488 (2002) 503-516.

E-[OPERA 4] *Request for a Test Exposure of OPERA Targets in the NuMI Beam*, K. Kodama et al, FERMILAB-PROPOSAL-0952.

R-[OPERA 5] *Electron/pion separation with an Emulsion Cloud Chamber by using a Neural Network*, L. Arrabito et al, JINST 2 (2007) P02001.

R-[OPERA 6] *First events from CNGS beam detected with the OPERA detector*, R. Acquafredda et al (OPERA collaboration), New J. Physics (2006) 8 303.

R-[OPERA 7] *The detection of neutrino interactions in the emulsion/lead target of the OPERA experiment*, N. Agafonova et al (OPERA collaboration), JINST 4 (2009) PP06020.

R-[OPERA 8] *The OPERA experiment in the CERN to Gran Sasso neutrino beam*, R. Acquafredda et al (OPERA collaboration), JINST 4 (2009) P04018.

R-[OPERA 9] *Study of the effects induced by lead on the emulsion films of the OPERA experiment*, A. Anokhina et al (OPERA collaboration), JINST 3 (2008) P07002.

R-[OPERA 10] *Emulsion sheet doublets as interface trackers for the OPERA experiment* A. Anokhina et al (OPERA collaboration), JINST 3 (2008) P07005.

R-[OPERA 11] *The OPERA global readout and GPS distribution system* Marteau, J. for the OPERA collaboration, NIM A617 (2010) 291-293.

C-[OPERA 12] *OPERA first events from the CNGS neutrino beam* Marteau, J., for the OPERA collaboration, Proceedings of the XLII Ind Moriond session, La Thuile, 2007; arXiv: 0706.1699.

C-[OPERA 13] *The OPERA experiment: a direct search of the  $\nu_\mu \rightarrow \nu_\tau$  oscillations* Marteau, J. for the OPERA collaboration, 11th ICATPP Conference on Astroparticle, Particle, Space Physics, Detectors and Medical Physics Applications, Como 5-9 Oct. 2009; arXiv:0910.3468.

R-[OPERA 14] *Nuclear emulsions in the OPERA experiment*, OPERA collaboration, Radiat. Meas. 44 (2009) 840-845.

R-[OPERA 15] *Measurement of the atmospheric muon charge ratio with the OPERA detector*, OPERA collaboration, Eur. Phys. J. C 67 (2010) 25.

R-[OPERA 16] *Observation of a first  $\nu_\tau$  candidate in the OPERA experiment in the CNGS beam*, OPERA collaboration, Phys. Lett. B 691 (2010) 138-145.

R-[OPERA 17] *Study of neutrino interactions with the electronic detectors of the OPERA experiment*, OPERA collaboration, New J. Phys. 13 (2011) 053051.

R-[OPERA 18] *Momentum measurement by the Multiple Coulomb Scattering method in the OPERA lead emulsion target*, OPERA collaboration, New J. Phys. 14 (2011) 013026.

**PUBLI.  
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OPERA**

R-[OPERA 19] *Search for  $\nu_\mu \rightarrow \nu_\tau$  oscillation with the OPERA experiment in the CNGS beam*, OPERA collaboration, New J. Phys. (2011), arXiv: 1107.2594.

R-[OPERA 20] *Measurement of the neutrino velocity with the OPERA detector in the CNGS beam*, OPERA collaboration, JHEP 1210 (2012) 093, arXiv:1109.4897.

R-[OPERA 21] *Measurement of the neutrino velocity with the OPERA detector in the CNGS beam using 2012 dedicated data*, OPERA collaboration, JHEP 1301 (2013) 153, arXiv:1212.1276.

R-[OPERA 22] *Search for  $\nu_\mu \rightarrow \nu_e$  oscillation with the OPERA experiment in the CNGS beam*, OPERA collaboration, JHEP07 (2013) 004, arXiv: 1303.3953.

R-[OPERA 23] *New results on for  $\nu_\mu \rightarrow \nu_\tau$  appearance with the OPERA experiment in the CNGS beam*, OPERA collaboration, JHEP 1311 (2013) 036, JHEP 1404 (2014) 014 , arXiv: 1308.2553.

R-[OPERA 24] *Evidence for  $\nu_\mu \rightarrow \nu_\tau$  appearance in the CNGS neutrino beam with the OPERA experiment*, OPERA collaboration, Phys. Rev. D 89 (2014) 051102 , arXiv: 1401.2079.

E-[T2K 1] *A detector to monitor the neutrino beam asymmetry at the T2K 280m hall*, the 2KM LR monitor subgroup, experimental proposal submitted to T2K collaboration, 09/2008; experimental project KEK-P35.

C-[T2K 2] *MicroTCA implementation of synchronous Ethernet-Based DAQ systems for large scale experiments*, Girerd, C., Autiero, D., Carlus, B., Gardien, S., Marteau, J., Tromeur, W., talk presented at the 2009 Real Time Conference, Beijing, May '09, IEEE proceedings of the conference.

R-[T2K 3] *The T2K Experiment*, T2K collaboration, NIM A659 (2011) 106-135, arXiv:1106.1238.

R-[T2K 4] *Indication of Electron Neutrino Appearance from an Accelerator-produced Off-axis Muon Neutrino Beam*, T2K collaboration, Phys.Rev.Lett.107 (2011) 041801.

R-[T2K 5] *Measurements of the T2K neutrino beam properties using the INGRID on-axis near detector*, T2K collaboration, NIM A694 (2012) 211-223, arXiv:1111.3119.

R-[T2K 6] *First Muon-Neutrino Disappearance Study with an Off-Axis Beam*, T2K collaboration, Phys. Rev. D 85 (2012) 031103(R), arXiv:1201.1386.

R-[T2K 7] *The T2K neutrino flux prediction*, T2K collaboration, Journal-ref: Phys. Rev. D 87 (2013) 012001, arXiv:1211.0469.

R-[T2K 8] *Measurement of the inclusive NuMu charged current cross section on carbon in the near detector of the T2K experiment*, T2K collaboration, Phys.Rev. D87 (2013) 9, 092003, arXiv:1302.4908.

R-[T2K 9] *Evidence of electron neutrino appearance in a muon neutrino beam*, T2K collaboration, Phys.Rev. D88 (2013) 3, 032002, arXiv:1304.0841.

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T2K**

R-[T2K 10] *Measurement of neutrino oscillation parameters from muon neutrino disappearance with an off-axis beam*, T2K collaboration, Phys. Rev. Lett. 111 (2013) 211803, arXiv:1308.0465.

R-[T2K 11] *Observation of electron neutrino appearance in a muon neutrino beam*, T2K collaboration, Phys. Rev. Lett. 112 (2014) 061802, arXiv:1311.4750.

C-[T2K 12] *Recent Results from the T2K Experiment*, Abe, K. et al, Nucl. Phys. Proc. Suppl. 23 (2014) 246-247.

R-[T2K 13] *Precise measurement of the neutrino mixing parameter  $\theta_{23}$  from muon neutrino disappearance in an off-axis beam*, T2K collaboration, Phys. Rev. Lett. 112 (2014) 181801, arXiv:1403.1532.

R-[T2K 14] *Measurement of the intrinsic electron neutrino component in the T2K neutrino beam with the ND280 detector*, T2K collaboration, Phys.Rev. D89 (2014) 092003, arXiv:1403.2552.

R-[T2K 15] *Measurement of the neutrino-oxygen neutral-current interaction cross section by observing nuclear de-excitation  $\gamma$ -rays*, T2K collaboration, Phys. Rev. D 90 (2014) 072012, arXiv:1403.3140.

**PUBLI.  
T2K**

- R-[T2K 16] *Measurement of the inclusive  $\nu_\mu$  charged current cross section on iron and hydrocarbon in the T2K on-axis neutrino beam*, Abe, K., et al, T2K Collaboration, Phys. Rev. D 90 (2014) 5, 052010, arXiv:1407.4256.
- R-[T2K 17] *Measurement of the Inclusive Electron Neutrino Charged Current Cross Section on Carbon with the T2K Near Detector*, Abe, K. et al, T2K Collaboration, Phys. Rev. Lett. 113 (2014) 24, 241803, arXiv:1407.7389.
- R-[T2K 18] *Neutrino Oscillation Physics Potential of the T2K Experiment*, Abe, K. et al, T2K Collaboration, PTEP 2015 (2015) 4, 043C01, arXiv:1409.7469.
- R-[T2K 19] *Search for short baseline  $\nu_e$  disappearance with the T2K near detector*, Abe, K. et al, T2K Collaboration, Phys.Rev. D91 (2015) 051102, arXiv:1410.8811.
- R-[T2K 20] *Measurement of the  $\nu_\mu$  CCQE cross section on carbon with the ND280 detector at T2K*, Abe, K. et al, T2K Collaboration, Phys.Rev. D92 (2015) 112003, arXiv:1411.6264.
- R-[T2K 21] *Measurements of neutrino oscillation in appearance and disappearance channels by the T2K experiment with 6.6E20 protons on target*, Abe, K. et al, T2K Collaboration, Phys.Rev. D91 (2015) 072010, arXiv:1502.01550.
- R-[T2K 22] *Measurement of the  $\nu_\mu$  charged current quasi-elastic cross-section on carbon with the T2K on-axis neutrino beam* K. Abe, K., et al, T2K Collaboration, Phys.Rev. D91 (2015) 112002, arXiv:1503.07452.
- R-[T2K 23] *Measurement of the Electron Neutrino Charged-current Interaction Rate on Water with the T2K ND280 pi-zero Detector* Abe, K., et al, T2K Collaboration, Phys.Rev. D91 (2015) 112010, arXiv:1503.08815.
- R-[T2K 24] *Measurement of the muon neutrino inclusive charged-current cross section in the energy range of 1-3 GeV with the T2K INGRID detector*, Abe, K., et al, T2K Collaboration, arXiv:1509.06940.
- R-[T2K 25] *Measurement of muon anti-neutrino oscillations with an accelerator-produced off-axis beam*, Abe, K., et al, T2K collaboration: K. Abe, arXiv:1512.02495.

**PUBLI.  
LAGUNA-LBNO  
WA105**

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- R-[LAG 1] *Large underground, liquid based detectors for astro-particle physics in Europe: scientific case and prospects* D.Autiero et al, JCAP 11 (2007) 011.
- E-[LAG 2] *The LAGUNA design study- towards giant liquid based underground detectors for neutrino physics and astrophysics and proton decay searches, (the LAGUNA collaboration), contribution to the Workshop "European Strategy for Future Neutrino Physics", CERN, Oct. 2009, arXiv: 1001.0077.*
- E-[LAG 3] *Expression of Interest for a very long baseline neutrino oscillation experiment (LBNO)*, Stahl, A., et al., CERN-SPSC-2012-021, SPSC-EOI-007.
- R-[LAG 4] *The mass-hierarchy and CP-violation discovery reach of the LBNO long-baseline neutrino experiment*, LAGUNA-LBNO Collaboration, JHEP 1405 (2014) 094, arXiv:1312.6520.
- E-[LAG 5] *LBNO-DEMO: Large-scale neutrino detector demonstrators for phased performance assessment in view of a long-baseline oscillation experiment*, Agostino, L., et al, The LBNO-DEMO - WA105 - Collaboration, CERN-SPSC-2014-013 ; SPSC-TDR-004, arXiv:1409.4405.
- R-[LAG 6] *Optimised sensitivity to leptonic CP violation from spectral information: the LBNO case at 2300 km baseline*, Agarwalla, S.K. et al, LAGUNA-LBNO Collaboration, arXiv:1412.0593.
- R-[LAG 7] *The LBNO long-baseline oscillation sensitivities with two conventional neutrino beams at different baselines*, Agarwalla, S.K. et al, LAGUNA-LBNO Collaboration, arXiv:1412.0804.
- R-[TD 1] *Auto-triggerable HPD sensors fully readout on ethernet: applications for high-energy physics and medical imaging*, S.Katsanevas, G.Largerion, J.Marteau, G.Moret, NIM A504 (2003) 103-108.
- R-[TD 2] *Two-head small animal PET prototype with LSO/LuAP coupled to a multi-anode PMT* R.Barbier,

Y.Déclais, C.Dujardin, N.Garnier, M.Janier, I.A.Kamenkikh, G.Largerou, J.Marteau, C.Pédrini, D.Sappey-Marinié, NIM A 527 (2004) 175-179.

R-[TD 3] *The ClearPET™ project: development of a 2nd generation high-performance small animal PET scanner* Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Volume 537, Issues 1-2, 21 January 2005, Pages 307-311, K. Ziemonis et al.

R-[TD 4] *Muon Tomography: Plans for Observations in the Lesser Antilles*, D.Gibert, F. Beauducel, Y.Déclais, N.Lesparre, J.Marteau, F.Nicollin, A.Tarantola, *Earth Planets and Space*, Vol. 52, 153-165, doi: 10.5047/eps.2009.07.003, 2010.

C-[TD 5] *The MU-RAY project: Summary of the round-table discussions*, Beauducel, F. et al, *Earth Planets and Space*, Vol. 52, 145-151, doi: 10.5047/eps.2009.07.003, 2010.

R-[TD 6] *Geophysical muon tomography: feasibility and limits*, N.Lesparre, D.Gibert, J.Marteau, Y.Déclais, D.Carbone, E.Galichet, *Geophysical Journal International*, Vol. 183, 1348-1361, doi: 10.1111/j.1365-246X.2010.04790.x, 2010.

C-[TD 7] *Muons tomography applied to geosciences and volcanology*, J. Marteau, D. Gibert, N. Lesparre, F. Nicollin, P. Noli, F. Giaccoppo, NIM A, 2011, 10.1016/j.nima.2011.11.061.

R-[TD 8] *Bayesian Dual Inversion of Experimental Telescope Acceptance and Integrated Flux for Geophysical Muon Tomography*, N. Lesparre, D. Gibert & J. Marteau,, *Geophysical Journal International*, Vol. 188, 490-497, doi: 10.1111/j.1365-246X.2011.05268.x, 2012.

R-[TD 9] *Design and Operation of a Field Telescope for Cosmic Ray Geophysical Tomography*, Lesparre, N., J. Marteau, Y. Déclais, D. Gibert, B. Carlus, F. Nicollin & B. Kergosien, *Geosci. Instrum. Method. Data Syst.*, 1, 33-42, 2012, doi:10.5194/gi-1-33-2012

R-[TD 10] *Density muon radiography of La Soufrière of Guadeloupe volcano: comparison with geological, electrical resistivity and gravity data*, N. Lesparre, D. Gibert, J. Marteau, F. Nicollin, O. Coutant & J.-C. Komorowski, *Geophys. J. Int.* (2012) 190, 1008–1019, doi: 10.1111/j.1365-246X.2012.05546.x.

R-[TD 11] *Background noise estimations in geophysical muon tomography experiments*, N. Lesparre, J. Marteau & D. Gibert, *Geosci. Instrum. Method. Data Syst.*, in preparation.

R-[TD 12] *An experiment of muon imaging at Mt. Etna (Italy)*, Carbone, D., Gibert, D., Marteau, J., Diamant, M., Zuccarello, L., Galichet, E., *Geophys. J. Int.*, GJI-13-0406

R-[TD 13] *Effects of upward-going cosmic muons on density radiography of volcanoes*, Jourde, K., D. Gibert, J. Marteau, J. de Bremond d'Ars, S. Gardien, C. Girerd, J.-C. Ianigro & D. Carbone, *Geophysical Research Letters*, accepted, 2014.

R-[TD 14] *Implementation of sub-nanoseconds TDC in FPGA: applications to time-of-flight analysis in muon radiography*, Marteau, J., J. de Bremond d'Ars, D. Gibert, K. Jourde, S. Gardien, C. Girerd, J.-C. Ianigro, *IOP Measurement Science and Techniques*, in2p3-00873192, accepted, 2014, arXiv : 1310.4281.

R-[TD 15] *Joint inversion of muon tomography and gravimetry - a resolving kernel approach* Jourde, K., Gibert, D., Marteau, J., *Geosci. Instrum. Method. Data Syst. Discuss.* 5 (2015) 83-116.

R-[TD 16] *Monitoring temporal opacity fluctuations of large structures with muon tomography : a calibration experiment using a water tower tank* Jourde, K., Gibert, D., Marteau, J., de Bremond d'Ars, J., Gardien, S., Girerd, C., Ianigro, J.-C., submitted to *Scientific Reports, Nature*. arXiv : 1504.02230.

C-[TD 17] *Muon tomography applied to active volcanoes* Marteau, J., Carlus, B., Gibert, D., Ianigro, J.-C., Jourde, K. Kergosien, B., Rolland, P., *International Conference on New Photo-detectors, PhotoDet2015*, 6-9 July 2015, Moscow, Troitsk, Russia. Submitted to *PoS*, arXiv:1510.05292.

R-[TD 18] *3D density imaging with muons ux measurements from underground galleries*, Lesparre, N., Cabrera, J., Marteau, J., submitted to *Journal of Geophysical Research*.

C-[TD 19] *Potential of muon flux density and electrical resistivity imageries for detecting and characterizing discontinuities in a clay medium at the Tournemire URL*, Lesparre, N., Cabrera, J., Gélis,



C., Marteau, J., proceedings of the EUROSAFE conference, *Towards Convergence of Technical Nuclear Safety Practices in Europe*.

R-[TD 20] *Electrical resistivity imaging in transmission between surface and underground tunnel for fault characterization*, Lesparre, N., Boyle, A., Grychtol, B., Cabrera, J., Marteau, J., Adler, A., accepted for publication in Journal of Applied Geophysics.

P-[TD 1p] *Muon tomography in the Lesser Antilles : application to la Soufrière de Guadeloupe volcano* Gibert D., Lesparre N., Marteau J., Kergosien B., Nicollin F., Poster presented at the European Geophysical Union (EGU) general assembly 2010, Vienne.

P-[TD 2p] *Analysis of muon tomography data sets: study of the geological layers above the Mont Terri underground rock laboratory*, Lesparre N., Gibert D., Marteau J., Carlus B., Déclais Y., Nussbaum C., Poster presented at the European Geophysical Union (EGU) general assembly 2010, Vienne.

P-[TD 3p] *Design and Operation of a Field Telescope for Cosmic Ray Geophysical Tomography*, Marteau, J., Carlus, B., Déclais, Y., Vanzetto, S., Gibert, D., Lesparre, N., Kergosien, B., Nicollin, F., Rolland, P., Poster presented at the European Geophysical Union (EGU) general assembly 2011, Vienne.

P-[TD 4p] *Muon Tomography and Volcanic Risks in the Lesser Antilles: the Example of the Soufrière of Guadeloupe* Gibert, D., Lesparre, N., Marteau, J., Nicollin, F., Kergosien, B., Rolland, P., Coutant, O. Poster presented at the European Geophysical Union (EGU) general assembly 2011, Vienne.

P-[TD 5p] *Design and Operation of a Field Telescope for Cosmic Ray Geophysical Tomography*, Marteau, J., Carlus, B., Déclais, Y., Vanzetto, S., Gibert, D., Lesparre, N., Kergosien, B., Nicollin, F., Rolland, P., Poster presented at the European Geophysical Union (EGU) general assembly 2011, Vienne.

P-[TD 6p] *DIAPHANE muon density tomography project : readout upgrades* Marteau, J., Carlus, B., Gardien, S., Girerd, C., Ianigro, J.-C., Montorio, J.-L., Gibert, D., Nicollin, F., Poster presented at the European Geophysical Union (EGU) general assembly 2012, Vienne.

R-[TH 1] *Effects of the Nuclear Correlations on the Neutrino-Oxygen Interactions*, J. Marteau Eur.Phys.J.A5:183-190, 1999.

R-[TH 2] *Nuclear effects in neutrino nucleus interactions*, J. Marteau, J. Delorme, M. Ericson, Nucl.Instrum.Meth. A451 (2000) 76-80.

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