LYSO:Ce and LuYAG:Pr light yield and energy resolution comparison

E.A.Babichev a , S.E.Baru a , D.N.Grigoriev a , V.P.Oleynikov a,b , V.V.Porosev a , G.A.Savinov a , Stephane Callier c

Lavrentiev ave. 11, Novosibirsk 630090, RUSSIA,

Pirogova st. 2, Novosibirsk 630090, RUSSIA,

E-mail: porosev@inp.nsk.su

ABSTRACT: bla-bla-bla

KEYWORDS: LYSO:Ce, LuYAG:Pr, Scintillator light yield, Energy resolution of PMT detector, Light collection Monte Carlo simulation .

^aBudker Institute of Nuclear Physics,

^bNovosibirsk State University,

^cOMEGA Ecole Polytechnique-CNRS/IN2P3, Palaiseau, France

^{*}Corresponding author.

Contents		
1.	Introduction	1
2.	Energy resolution of the detector	1
3.	Experiment	1
4.	Monte Carlo simulation	1
5.	Results and discussion	1
6.	Energy resolution of the detector	1
7.	Conclusion	2
8.	Acknowledgements	2
2.	Energy resolution of the detector	
2.	Energy resolution of the detector	
3.	Experiment	
4.	Monte Carlo simulation	
5.	Results and discussion	
6.	Energy resolution of the detector	

- 7. Conclusion
- 8. Acknowledgements

References

- [1] S.E.Baru, A.G.Khabakhpashev, I.R.Makarov, G.A.Savinov, L.I.Shekhtman, V.A.Sidorov, *Digital X-ray imaging installation for medical diagnostics*. Nucl.Instr.and Meth. A238 (1985), p.165
- [2] E.A.Babichev, S.E.Baru, V.R.Groshev, A.G.Khabakhpashev, V.V.Porosev, G.A.Savinov, L.I.Shekhtman, V.I.Telnov, *Photon counting and integrating analog gaseous detectors for digital scanning radiography*. Nuclear Instruments and Methods in Physics Research, A419(1998) p.290-294
- [3] E.A.Babichev, S.E.Baru, V.R.Groshev, A.G.Khabakhpashev, G.S.Krainov, V.V.Leonov, V.A.Neustroev, V.V.Porosev, G.A.Savinov, L.I.Shekhtman *Usage of two types of high pressure Xenon chambers for medical radiography*. Nuclear Instruments and Methods in Physics Research, A461 (2001) p.430-434
- [4] E. A. Babichev, S. E. Baru, D. N. Grigoriev, V. R. Groshev, V. V. Leonov, P. A. Papushev, V. V. Porosev, G. A. Savinov, V. R. Shayakhmetov, L. I. Shekhtman, Yu. A. Tikhonov, Yu. G. Ukraintsev, *High-resolution detectors for medical applications and synchrotron radiation research*. Nuclear Instruments and Methods in Physics Research, A628 (2011), Issue 1, p.440-443.
- [5] Stefan Seifert, Herman T. van Dam, Jan Huizenga, Ruud Vinke, Peter Dendooven, Herbert LÄűhner, Dennis R. Schaart, Simulation of silicon photomultiplier signals. IEEE TRANSACTIONS ON NUCLEAR SCIENCE, VOL. 56, NO. 6, December 2009, p.3726-3733
- [6] Virginia Ch. Spanoudaki and Craig S. Levin. *Scintillation induced response in passively-quenched Si-based single photon counting avalanche diode arrays.* Opt Express. 2011 Jan 17; 19(2):1665-79.
- [7] K. Yamamoto, K. Yamamura, K. Sato, S. Kamakura, T. Ota, H. Suzuki, S. Ohsuka, *Development of Multi-Pixel Photon Counter (MPPC)*. 2007 IEEE Nuclear Science Symposium Conference Record N24-292
- [8] Th.Kirn, M.Haring, D. Schmitz, W. Schulz, *Absorption length, radiation hardness and aging of different optical glues*. CMS NOTE 1999 003.
- [9] P. A. Bak, A. M. Batrakov, R. A. Kadyrov, P. V. Logachev, A. V. Pavlenko, A. N. Panov, V. Ya. Sazanskii, G. A. Fatkin, *Control system of a linear induction accelerator of an X-ray complex: Structure, hardware, and test performance.* Optoelectronics, Instrumentation and Data Processing. June 2011, Volume 47, Issue 3, pp 303-312
- [10] Stephane Callier, Christophe Dela Taille, Gisele Martin-Chassard, Ludovic Raux, *EASIROC*, an easy and versatile ReadOut device for SiPM. Physics Procedia 37 (2012) p.1569-1576
- [11] M. Balcerzyk, M. Moszynski, M. Kapusta, D. Wolski, YSO, LSO, GSO and LGSO. A Study of Energy Resolution and Nonproportionality. IEEE Transactions on Nuclear Science (2000), Volume 47, Issue 4, p.1319 - 1323
- [12] A. Phunpueok, W. Chewpraditkul, P. Limsuwan, C. Wanarak, *Light output and energy resolution of Lu*_{0.7}Y_{0.3}AlO₃: *Ce and Lu*_{1.95}Y_{0.05}SiO₅: *Ce scintillators*. Procedia Engineering 32 (2012) p.564-570