

Liam Paul Gaffney

Contact Information	CERN, Bat. 26/1-013, CH-1211 Geneva 23, Switzerland	Mobile: +44 7922 821415 Email: liam.gaffney@cern.ch	
Research Interests and Techniques	 Octupole collectivity in the actinide and lanthanide regions. Shape coexistence across the nuclear chart. Deformation about N = 40 and ⁶⁸Ni. Coulomb excitation with Radioactive Ion Beams (RIBs). Lifetime measurements utilising Recoil Distance Doppler Shift (RDDS). Laser spectroscopy of heavy elements. Few-nucleon transfer reactions with RIBs. Combined in-beam γ-ray and electron spectroscopy (SAGE). 		
Research Experience	CERN , Geneva, Switzerland Research Fellow (COFUND)	Oct. 2016 – Present	
	University of the West of Scotland , Pa Post-doctoral Research Associate	aisley, UK Mar. 2015 – Sep. 2016	
	KU Leuven, IKS , Leuven, Belgium Post-doctoral Research Fellow FWO Pegasus Marie Curie Fellow Post-doctoral Research Fellow	Jan. 2015 – Mar. 2015 Jan. 2014 – Dec. 2014 Feb. 2013 – Dec. 2013	
	CERN-ISOLDE , Geneva, Switzerland STFC Long-Term Attachment (LTA)	May 2010 – Oct. 2010	
	University of Liverpool , Liverpool, UK PhD Student	Oct. 2008 – Feb. 2013	
Education	University of Liverpool , Liverpool, UK		
	PhD, Nuclear Physics, July 2013		
	 Thesis Topic: Octupole Collectivity in ²²⁰ Rn and ²²⁴ Ra Supervisor: Prof. Peter Butler 		
	BSc, Physics, June 2008, First Class Honours		
Awards and Fellowships	Tomasz Czosnyka Honorary Award 2017 EU-CERN COFUND Marie Skłodowska-Curie Actions Fellowship 2016 European Physical Society (EPS) Thesis Prize in Nuclear Physics 2012 – 2014 FWO Pegasus Marie Skłodowska-Curie Actions Fellowship (short) 2014 Institute of Physics (IOP) Nuclear Physics Group Prize (Early Career Award) 2012		

Professional Memberships	Associate Member of the Institute of Physics, 2008 – present Individual Member of the European Physical Society, 2015 – present		
References	Available on request		
Invited Conference Talks	 Correlated error analysis in Gosia 3rd Gosia Workshop, Warsaw, Poland 	April 2018	
	• Nuclear structure physics at HIE-ISOLDE IoP Nuclear Physics Group Conference, Paisley, UK	April 2018	
	• Exotic shapes: Coulomb excitation of radioactive-ion beams XXXV Mazurian Lakes Conference on Physics, Piaski, Poland		
	• Latest physics results from HIE-ISOLDE Colloque GANIL, Loire Valley, France	October 2017	
	• Exploiting re-accelerated radioactive ion beams at HIE-ISOLDE NUSPIN Meeting 2017, GSI, Darmstadt, Germany	June 2017	
	• In-source laser spectroscopy of mercury isotopes at ISOLDE NUSTAR Meeting 2016, GSI, Darmstadt, Germany	March 2016	
	• Shape coexistence in the light lead region October 2015 Frontier of Gamma-ray spectroscopy Symposium (Gamma15), Osaka, Japan		
	• Pear-shaped nuclei measured via Coulomb excitation September 2015 European Nuclear Physics Conference 2015, Groningen, Netherlands		
	• Studying shape coexistence above $Z = 82$ ISTROS Conference 2015, Častá-Papiernička, Slovakia	May 2015	
	• Nuclear structure goes pear-shaped July 2014 Nuclear Structure Conference 2014 (NS2014), Vancouver, Canada		
	• A postcard from Miniball: Recent results from REX-ISOLDE EGAN 2014 Workshop, GSI, Darmstadt, Germany	June 2014	
	• Octupole collectivity studied using radioactive-ion beams IoP Nuclear Physics Group Conference, York, UK	April 2013	
Highlighted Conference Contributions	• <i>RDDS lifetime measurements in</i> ^{184,186} <i>Hg</i> Shape coexistence across the chart of nuclides, York, UK	April 2013	
	• Measurements of octupole collectivity in ^{220,222} Rn and ^{222,224} Ra using Coulomb excitation at ISOLDE June 2011 ARIS 2011, Leuven, Belgium		
Seminars	• A complementary approach to shape coexistence in mercury Argonne National Laboratory, USA	March 2018	
	• A complementary approach to shape coexistence in nuclei University of Manchester, UK	May 2017	
	• A complementary approach to shape coexistence in nuclei University of Jyväskylä, Finland	February 2016	
	• Nuclear shape phenomena in heavy nuclei IPHC Strasbourg, France	March 2014	

December 2013

- *It's all gone pear-shaped* CEA Saclay, France
- Searching for octupole-deformed nuclei at ISOLDE May 2013 CERN, Switzerland

Selected Publications

- K. Wrzosek-Lipska and L. P. Gaffney Unique and complementary information on shape coexistence in the neutron-deficient Pb region derived from Coulomb excitation J Phys G, 43, 024012, Feb 2016.
- [2] N. Kesteloot, B. Bastin, L. P. Gaffney, K. Wrzosek-Lipska *et al.* Deformation and mixing of coexisting shapes in neutron-deficient polonium isotopes *Phys. Rev. C*, **92**, 054301, Nov 2015.
- [3] L. P. Gaffney, J. Van De Walle *et al.* Low-energy Coulomb excitation of ⁶²Fe and ⁶²Mn following in-beam decay of ⁶²Mn *EPJ A*, **51**, 136, Oct 2015.
- [4] L. P. Gaffney, A. P. Robinson, D. G. Jenkins *et al.* Collectivity in the light radon nuclei measured directly via Coulomb excitation *Phys. Rev. C*, **91**, 064313, Jun 2015.
- [5] M. Zielińska, L. P. Gaffney, K. Wrzosek-Lipska, et al. Analysis methods of safe Coulomb-excitation experiments with radioactive ion beams using the GOSIA code arXiv preprint arXiv:1506.04633, Jun 2015.
- [6] L. P. Gaffney, M. Hackstein, R. D. Page, T. Grahn, M. Scheck *et al.* Shape coexistence in neutron-deficient Hg isotopes studied via lifetime measurements in ^{184,186}Hg and two-state mixing calculations *Phys. Rev. C*, **89**, 024307, Feb 2014.
- [7] L. P. Gaffney, P. A. Butler, M. Scheck, A. B. Hayes, F. Wenander, et al. Studies of pear-shaped nuclei using radioactive beams *Nature*, 497, 199, May 2013.
- [8] M. Scheck, P. A. Butler, L. P. Gaffney *et al.* Combined in-beam electron and γ-ray spectroscopy of ^{184,186}Hg *Phys. Rev. C*, 83, 037303, Mar 2011.
- Media Interactions
- Facebook Live Celebrating 50 years of physics at ISOLDE October 2017 https://www.facebook.com/cern/videos/1484398328314174/
- Quoted in Gizmodo artcile Scientists Want to Do Some Crazy Physics Using Scrapped Medical Equipment by Ryan F. Mandelbaum July 2017 https://gizmodo.com/scientists-want-to-do-some-crazy-physics-using-scrapped-1794116642
- Contribution to Buzzfeed article I Asked 12 Scientists: What Is The One Fact Humanity Needs To Know? by Tom Chivers August 2015 http://www.buzzfeed.com/tomchivers/how-come-no-one-mentioned-evolution-bynatural-selection
- Google hangout at CERN *Going pear-shaped* May 2013 https://youtu.be/x8Jdu9O2RhU
- LANGUAGES English Native speaker
 - Dutch Breakthrough (A1)
 - French Breakthrough (A1)