



International Particle
Physics Outreach Group

International Particle Physics Outreach Group

WG on Applications for Society Current Status and Plans

Yiota Foka (co-convener)

WG Aim

Collect stories

on the practical applications of fundamental research for the benefit of society with human touch

Plenty exists: collect resources, to use material and references

Present a global view: IPPOG is international

What is distinct: Emotional memory

Example: The first hadron therapy in Berkley 1954 (same year as CERN foundation)

By Lawrence brothers.

The one discovered the cyclotron (Nobel Price).

The other was a doctor.

And they treated their mother.

WG Aim

Why: see also paper of Ugo Amaldi 1999 on spin-offs

Satisfy interest and curiosity of general public

Motivate young generation (from boring integrals to interesting applications)

Return to society for invested funds, motivating further funding

Briefly: Share our passions with society that is funding us and ensure continuation

Inject: we know these colleagues not only as scientists but as people as well

Leonardo da Vinci: The noblest pleasure is the joy of understanding

Il piacere piu nobile e la gioia di comprendere

Give a chance to general public and school children to understand what we understand !

WG Tools, Notebooks

Contributions: https://docs.google.com/document/d/10Klu9nDx_Cliz16QYE7LqgtncfrwWWzB31ZRT7vDLR0/edit?usp=sharing

Resources: https://docs.google.com/document/d/1vJnm2a7wmzHVHpM_0xUVeNw_JMPqmwQlbdZ-HwUozGc/edit?usp=sharing

Many of those are collections of links to other resources and documents

WG News

WG Contribution to IPPOG Annual Report provided to Claudia by BGG and YF

Updates of resources

Updates of contributions

Introduction to ARIES outreach and possible cooperation

Discussion: how to advance more efficiently

- **readers/advisory group:** to have some readers injecting comments, ideas, and most importantly, to make sure that the stories are global and balanced
- **meeting every 2-3 months:** i.e. Thursday every 2nd month to advance faster with collecting stories

Update on Contributions

Latest contributions

- Despina: PET, and Heritage (muon tomography)
- Marina: GNSS and EEE project
- Katharina: Cloud formation and global climate
- Katharina: Superconductivity: Potential use for energy transport
- Thomas: addition to GPS and Touch screen
- YF: addition to PET

Expected contributions

- Barbora: MEDICIS, ROLEX, Solar Cells, web (in english)
- YF: Finalise Hadron Therapy
- Ralf: Ideas on muon tomography and more from GSI

One slide summary: for the Friday report to IPPOG plenary AND for our repository

Update on Contributions

Comments from preparing PET (with human touch)

- MW presentation
- MW personal interview
- Townsend contribution in Book: From Physics to Daily Life
- Despina's contribution on principle of operation and technical aspects

Challenges

To pay justice to all contributors and not bias it towards one person/lab
And keep it short and simple

Comments received

- **From (physics) students:** easy to read, learnt new things, interesting to have witness of one of the engineers working on it
- **From physicist:** just explain the principle of operation, take away all names, institutes etc
- **From general public** (his wife): easy to read but not interesting to see it via the eyes of someone of the group that worked on it

Solution? then, we need advisory group ! (not necessarily among current IPPOG members)

Update on Resources

ARIES Accelerating News <http://acceleratingnews.eu>

Daniela Antonio

Stories: like

“Bringing particle accelerators on ships:

<http://acceleratingnews.web.cern.ch/article/bringing-particle-accelerators-ships>

or

Using accelerators to disinfect (covid19) protective clothing

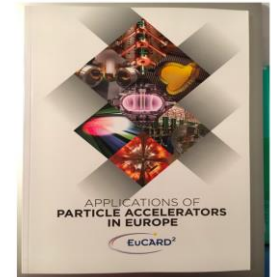
otherwise disinfected by toxic substances and unusable for 2 weeks

BOOK EuCARD:
Applications of Particle Accelerators in Europe

<http://cds.cern.ch/record/2716155>

And in our google folder

More resources: Accelerators for people EuCARD2



Update on Resources

CERN 60th Videos

<https://cern60.web.cern.ch/en/videos>

- CERN 60th Ugo Amaldi, Impact of Physics on Medicine
<https://cds.cern.ch/record/1694670/>
- CERN 60th Philippe Lebrun, Particle Accelerators: Vectors of Discovery, Motors of Development
<http://cds.cern.ch/record/1753365>
- CERN 60th Bob Jones **Science and society: the impact of computing at CERN on society**
<https://cds.cern.ch/record/1703692>
- CERN 60th Knowledge and Technology: from CERN to society
<https://videos.cern.ch/record/1950367>

Update on Resources

CERN 60th BOOK From Physics to Daily Life

<https://onlinelibrary.wiley.com/doi/book/10.1002/9783527687077>

- 10.1 Applications in Biology, Medicine, and Healthcare
- 10.2 Applications in Informatics, Energy and Environment

Editor(s): Beatrice Bressan

First published: 8 September 2014

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Author index: pages 331-336

Update on Resources

Very detailed Table of Contents

<https://www.wiley.com/en-us/From+Physics+to+Daily+Life%3A+Applications+in+Informatics%2C+Energy%2C+and+Environment-p-9783527332861>

Introduction: Sergio Bertolucci

Beatrice Bressan brings together a number of outstanding examples of successful cross-disciplinary technology transfer originating in fundamental physics research, which dramatically impacted progress in biomedical research and clinical applications.

Many of these examples were developed at CERN, a hotbed of fundamental inventions in particle physics.

Additional sections of the book deal with knowledge management and technology transfer including its economic aspects. While each chapter has been drafted by an expert in the field, the editor has carefully edited the whole book, ensuring a coherent overall structure.

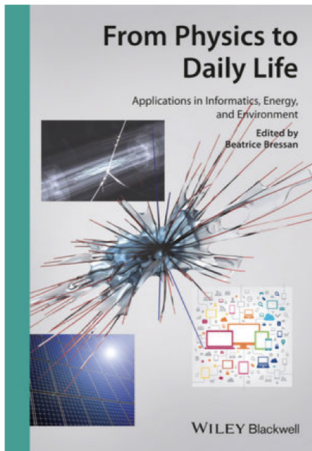
A must-have for policy makers, technology companies, investors, strategic planners in research and technology, as well as attractive reading for the research community..

Update on Resources

Possibility to buy the E-book for the WG group and IPPOG Forum ?

WILEY

To purchase this product, please visit <https://www.wiley.com/en-us/9783527332861>



From Physics to Daily Life: Applications in Informatics, Energy, and Environment

Beatrice Bressan (Editor)

E-Book	978-3-527-68702-2	August 2014	\$85.99
Hardcover	978-3-527-33286-1	November 2014	\$107.00
O-Book	978-3-527-68703-9	September 2014	Available on Wiley Online Library

Update on Resources

google for: “From Physics to Daily Life” and you get many examples,

Spin offs of High Energy Physics to Society

By: Ugo Amaldi

Proceedings of International Europhysics Conference on High Energy physics, Tampere Finland, 1999

https://books.google.fr/books?id=mUFTmHg_xUC&pg=PA293&lpg=PA293&dq=Alan+Jeavons+PET&source=bl&ots=KEDbelezUJ&sig=ACfU3U3R8ZHxazryEuLs27LAKcTOhDsOXQ&hl=fr&sa=X&ved=2ahUKEwjN17-I7pXpAhUhyYUKHTB5Dp8Q6AEwBXoECAoQAQ#v=onepage&q=Alan%20Jeavons%20PET&f=false

PET: CERN CDS

<http://cds.cern.ch/record/2299269?ln=fr>

Update on Resources

GSI Press Release, April 16, 2020

GSI Press Releases: filter out some interesting stories

GSI/FAIR research supports the fight against corona

GSI/FAIR uses its research potential and unique infrastructure to contribute to the management of the current corona pandemic. In several areas at GSI/FAIR, scientists are working to provide new insights and technologies that may help to fight the corona virus SARS-CoV-2. To this aim, the accelerators and laboratories on the Darmstadt campus are also being used. The laboratory is operational, while strictly abiding to safety regulations.

Overview of the four specific projects:

- **Ion radiation for vaccine development**
- **Therapeutic effect of low-dose radiation in SARS-CoV-2 induced pneumonia**
- **Improved and fast virus detection with single nanopore membranes**
- **Ion-track membranes with tailored nanopores for viral filtration masks**

This press release with picture is available on the website at

https://www.gsi.de/en/start/news/details/2020/04/16/gsi_fair_forschung_unterstuetzt_den_kampf_gegen_corona0.htm

Update on Resources

IPPOG Working Group: “Outreach of Applications for Society”

Formed October 2018 at 16th IPPOG meeting:

See panel report:

https://indico.cern.ch/event/742487/contributions/3147691/attachments/1729453/2794540/Panel_Outreach_PP_applications_report.pdf

Conveners:

Barbora Bruant Gulejova, Yiota Foka, hi

Advisors:

Manuela Cirilli, Manjit Dosajnh, Anais Rassat

























REMIT and STRATEGY:

- 1) Collect information about applications from nuclear and particle physics fundamental research in general used for the benefit of the society: stories, pictures, videos, animations, presentations, articles, posters....
- 2) Write easy understandable stories of fundamental research applications for society, which are currently missing and will be part of the IPPOG resource database (category “NPP and society”)

NPP: Nuclear and Particle Physics Fundamental Research

Shared with me > IPPOG WG Outreach of Applications

Name ↑

	IPPOG-WG-00A-Nov2019CERN
	CERN pet_wensveen.pdf 
	EuCARD_Applications-of-Accelerators-2017.pdf 
	General resources 
	Hadron therapy Masterclasses 
	Hadron therapy resources 
	KT Survey Results 2016.pdf 
	Medical applications resources 
	MEDIPIX 
	Overview-of-the-Tumour-Therapy-Facilities-with-C-Ions-in-Europ... 
	Tumor_Therapy_at_GSI_ion_therapy_Gerhard_Kraft.pptx 
	UNOSAT_notes_31_3_2017_BBG.docx 
	WWW_30_vyrocie_12_marec_2019_BBG_podklad.doc 