



FREYA

Connected Open Identifiers for Discovery, Access and Use of Research Resources

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Persistent Identifiers



Long-lasting reference to a resource

- The referent of the identifiers “persists” over time
 - Does not change
 - Does not disappear
 - But could be moved
- The identifier is globally unique
 - Created under some authority
 - Metadata
- May be de-referenceable
 - Landing page
 - Possibly to the (digital) resource itself

Why PIDs ?



- To know what you are talking about really is what you are talking about
 - Especially when they are outside your control
- Maintaining integrity as
 - Resources change, versions, rewrites
 - Resources move around
- Publishing into the scholarly record
 - Citation
 - Credit
 - Reproducibility
 - Reuse



PID Schemes



- DOIs
 - Publications
 - Data
- ORCID
- ARK
- Handle
- PURL
- URN
- ResearcherID
- INCHI
- LSID
- ISNI
- ISBN
- ...

ISIS Landing Page



File Edit View History Bookmarks Tools Help

ISIS Data Home | Science & Tec X +

https://data.isis.stfc.ac.uk/doi/INVESTIGATION/24066298/

Science & Technology Facilities Council

ISIS Data Journal

The archive for ISIS research data

ISIS ISIS Data

RB820232

Investigation title: Magnetic moment of EuO in spin filtering magnetic tunnel structures.

Release date: Sun Feb 26 08:05:26 GMT 2012

Creator: *Dr Adrian Ionescu*
Creator: *Dr Stuart Easton*
Creator: *Dr Crispin Barnes*

DOI: 10.5286/ISIS.E.24066298

Date of Experiment: Thu Feb 19 13:34:31 GMT 2009

Publisher: STFC ISIS Facility

Data format: [RAW/Nexus](#)
Select the data format above to find out more about it.


Data Citation

The recommended format for citing this dataset in a research publication is as:
[author], [date], [title], [publisher], [doi]

For Example:
Dr Adrian Ionescu et al; (2009): 820232, STFC ISIS Facility, doi:10.5286/ISIS.E.24066298

Abstract

EuO is the ferromagnetic oxide semiconductor with the highest demonstrated value of conduction band exchange splitting (0.6 eV), which makes it at present one of the most promising material for achieving high spin filtering in magnetic tunnelling junctions. We intend to study the tunnelling of single electrons in quantum dots through a spin filtering EuO barrier, as a collaboration merging the expertise in our group on ferromagnetic thin film structures with the Semiconductor Physics group expertise on quantum dots at the Cavendish Laboratory in Cambridge. In this light we strongly believe that it is now necessary to study how EuO interacts with different metallic electrodes such as NiFe, Co and Y, and with substrates commonly used in spintronic devices, Si and GaAs, and how the magnetic moment of EuO is influenced by and influences the adjacent layers.



Data collected on the CRISP instrument at the ISIS facility

[DOWNLOAD](#)
download the dataset



<http://inspirehep.net/?ln=en>



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HEP - INSPIRE-HEP

inspirehep.net/?ln=en

INSPIRE HEP

Welcome to [INSPIRE](#), the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

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HEP Search

High-Energy Physics Literature Database

Use "find " for SPIRES-style search ([other tips](#))

Brief format [Easy Search](#) [Advanced Search](#)

HOW TO SEARCH

SPIRES syntax is (mostly) supported (requires "find")

- [find a richter, b and t quark and date > 1984](#)
- [find j phys.rev.,D50,1140 or j jhep,0903,112](#)
- [find eprint arxiv:1007.5048](#) (Note the plots available on the detailed record)
- [find fulltext "quark-gluon plasma"](#) (Note new "fulltext" operator)
- [find a ellis and refersto a witten](#) (Note "refersto")
- [find a kane and citedby title SUSY and topcite 200+](#) (Note "citedby")

New techniques:

- [1985 richter quark multiplicity](#)
- [arXiv:1007.5048](#)
- [citedby:author:ellis -refersto:author:witten](#)
- [author:randall | author:sundrum cited:450->1350](#)

Additional Help:

- [More search tips and full help](#)

INSPIRE UPDATES

See our blog at blog.inspirehep.net for updates on new features and other news. You can also follow us at [@inspirehep](https://twitter.com/inspirehep) on twitter. To send us feedback use feedback@inspirehep.net. The data in INSPIRE is updated daily. To request corrections to data in INSPIRE, write us at help@inspirehep.net. INSPIRE superseded SPIRES in 2012.

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RESOURCES

- ADS
- arXiv
- HepData
- INIS
- PDG
- PDG review of online resources

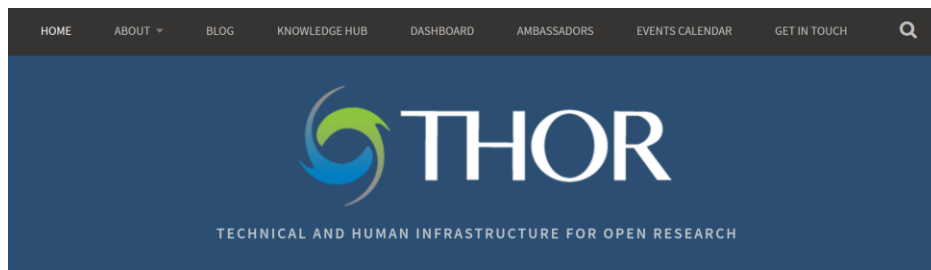
INSPIRE NEWS

- 2018-03-19 The 10 most highly cited 2013 papers: <https://t.co/BtdAmrg675>
- 2018-03-19 Find your latest citations: <https://t.co/Xw2V6ogKS6>
- 2018-03-16 The 10 most highly cited

The FREYA Project



- FREYA = persistent identifiers
 - “... iteratively extend a robust environment for Persistent Identifiers (PIDs) into a core component of European and global research e-infrastructures”
 - Part of the European Open Science Cloud
- Builds on THOR
 - which in turn built on ODIN
- Started 1 December 2017



Welcome to THOR

THOR is a 30 month project funded by the European Commission under the Horizon 2020 programme. It will establish seamless integration between articles, data, and researchers across the research lifecycle. This will create a wealth of open resources and foster a sustainable international e-infrastructure. The result will be reduced duplication, economies of scale, richer research services, and opportunities for



Science & Technology
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The FREYA partners



Hindawi



Data Archiving and Networked Services



EMBL-EBI



Three pillars of FREYA



PID Commons ...

- feeds requirements into PID Graph
- ensures population of PID Graph
- establishes governance and sustainability of PID Graph and services on it
- establishes rules of engagement for PID Graph

An **output** of FREYA

PID Graph

PID Graph ...

- gives benefits (through services) to communities of PID Forum

PID Commons

An **outcome** of FREYA

PID Forum

A **working tool** and an **output** of FREYA

PID Forum ...

- convenes stakeholders
- feeds requirements for PID Commons



New Services for existing PIDs



Making existing PID service providers more robust and useful

- Multiple Locations
 - Describing the criteria for picking one amongst several resource locations
- Direct Access to content
 - Exploring data resources that already provide content (DataCite, [GitHub issue](#))
 - identify life sciences databases that provide links to content
- Link Checker
 - Looking for stale content
- Core Metadata
 - Cross PID types
 - Schema.org



New PID Types



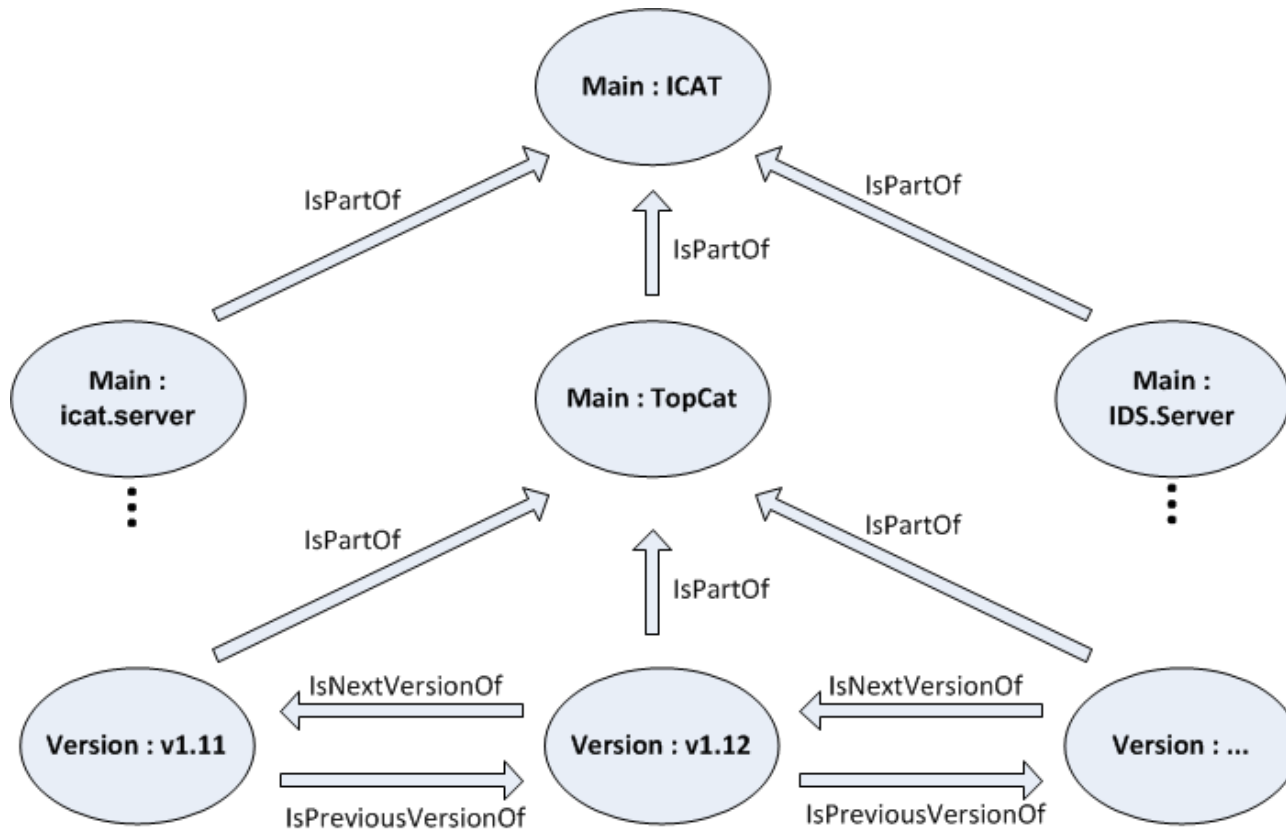
Develop services to support new PID types
e.g.

- Funder
 - Organisation
 - Conference
 - Project
 - Experiments, Clinical trials
 - Places
 - Facility/Instrument/Equipment
 - Software
 - Sample, Physical Objects
 - Licences
 - Events
-
- These are at very different levels of development
 - Currently undertaking a review

 - Common Metadata ?



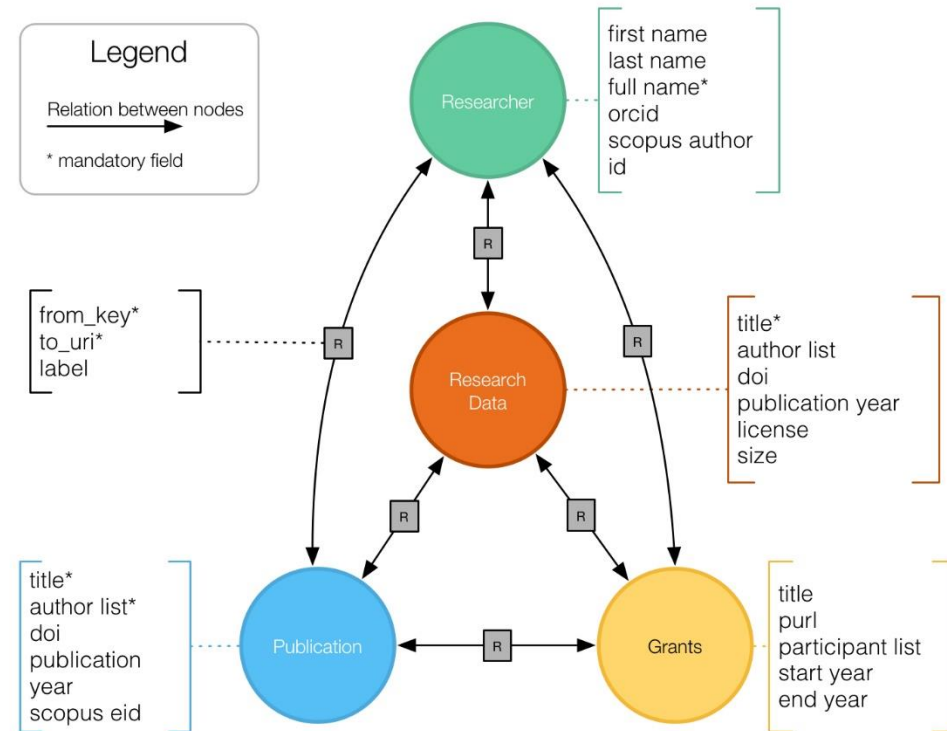
Example: Software



Building the PID Graph



- Developing a schema and tools to represent and use the PID graph
- Amir Aryani (ANDS)
 - <http://researchgraph.org/>
- Developed by: RDA Data Description Registry Interoperability WG
 - <https://rd-alliance.org/groups/data-description-registry-interoperability.html>
- Should take into account other work:
 - Research Objects
 - PROV-O
 - DCAT
 - CERIF
 - ...



Research Graph Meta Model

Version 2.0 (Aug 2016)





Implications for the PID Graph

- Provenance and attribution
- Possible new entities in research discourse e.g. “analysis”
- Usage patterns: formulating and testing research questions
- Borders between in-facility data management, in-community data handling, and cross-science pieces of scholarly communicable units

The PID Graph forms a superstructure, holding the dynamic, moving parts of the EOSC in place

What will FREYA be doing about it?



- FREYA's own disciplinary pilot applications
 - British Library, DANS: humanities and social sciences
 - CERN: high-energy physics
 - EMBL: life sciences
 - PANGAEA: earth and environmental sciences
 - STFC: facilities-based science with ISIS Neutron Source
- Each building a part of the PID Graph ...

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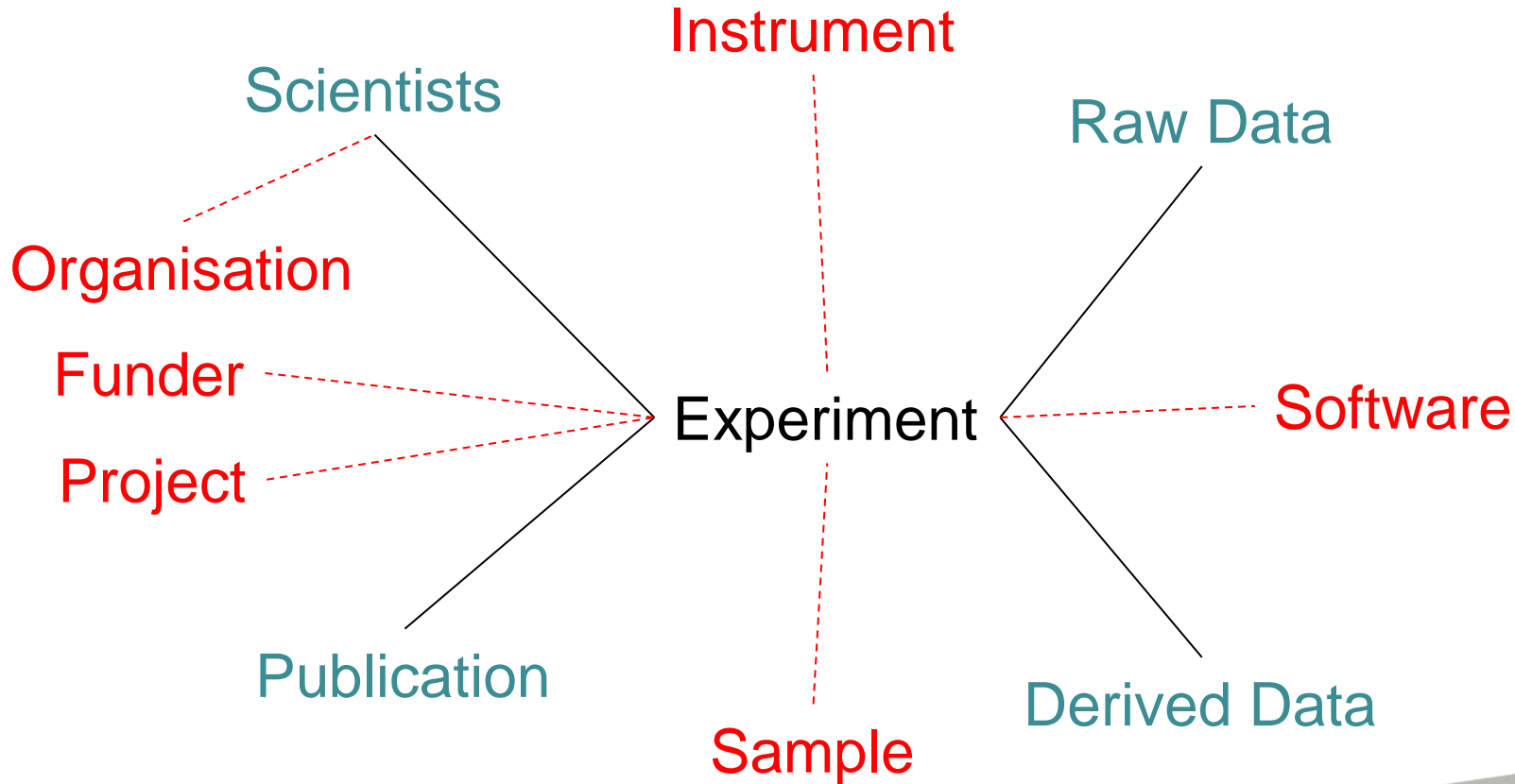
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DOWNLOAD
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Building the PID Graph



STFC Use Case



- This is the service and user group
 - ISIS Data User and Data Management systems
 - ISIS User Office, ICAT – Data catalogue, ePubs (institutional repository) , eData (other data repository), SESC (software repository)
- This is what the service does now
 - Register user – take their ORCID Id
 - Issue a grant of instrument time – with locally unique ID
 - Record experiments and data collected on them
 - Issue DOIs for “data” (or is it experiments ?) – many years to develop a data policy which has supported this.
- This is the goal for the service during the next year (or beyond if necessary)
 - Access the Orcid system – upload grant of instrument time to the Orcid record, extract relevant publications
 - Linking to our funder information – GatewaytoResearch, ResearchFish – funders, organisations
 - Make the notion of adding data collection – datasets across experiments associated by the scientist.
 - Enrich the record – equipment (instrument definition file) , sample, software
 - Provenance record pulling it all together at an experiment level (but allowing people to pull together other ways).
- We need PIDs to enable...
 - Better connection between users, grants, data,
 - Finding papers which reference ISIS experiments/data/equipment
 - Links to equipment, software, samples
 - Aggregates – pulling it all together at an experiment level



The PID Forum



- FREYA's PID Forum will be closely linked to the RDA
 - “The PID Forum is a stakeholder community, whose members collectively oversee the development and deployment of new PID types; it will be strongly linked to the Research Data Alliance (RDA).”
 - A foundation for the future **PID Commons**



Finally, this week



- Towards the PID Forum at the Research Data Alliance
- Berlin Plenary Meeting in March:
 - BoF with EOSC-hub and OpenAIRE-Advance
 - Wednesday 20 March
- Co-located event,
 - European Open Science Cloud-related projects: liaison with RDA and new contributions
 - Friday 22 March, 2pm.