We are sincerely delighted to have you on board as a Guest Editor for [*Discover Physics*](https://link.springer.com/journal/44418)(ISSN: 3059-2690).

[*Discover Physics*](https://link.springer.com/journal/44418) will use the information you provide in this form to select and schedule Collections.

Your Collection proposal is under consideration, and this form does not represent a confirmation from the journal. Please provide as much information as possible at this early stage.

Collections are published [open access](https://www.nature.com/srep/about/open-access) and online only.

Please do not submit a similar proposal to another journal whilst it is under review.

Please contact **Commissioning Editor: Xinyu Zhang(**[**xinyu.zhang@springernature.com**](mailto:xinyu.zhang@springernature.com)**)** if you have any questions.

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|  | **Content**  [**Part 1: Information for Guest Editor(s)** 2](#_Toc184378331)  [**Part 2: Information for Collection** 3](#_Toc184378332)  [**Part 3: Regular Questions** 4](#_Toc184378333) |

# **Part 1: Information for Guest Editor(s)**

|  |
| --- |
| Name: Romain Coulon |
| Institution:  International Bureau of Weights and Measures (BIPM) |
| E-mail: romain.coulon@bipm.org |
| Biography:  (We suggest a limit of 600 characters, and it is also currently plain text only, so does not support hyperlinks or text formatting) |
| Homepage:  https://www.researchgate.net/profile/Romain-Coulon-2  <https://scholar.google.com/citations?user=mjl_xAwAAAAJ&hl=fr&oi=ao>  https://www.linkedin.com/in/romain-coulon-79901311/ |
| Research interests: Particle Detectors, Ionizing particles, Metrology, Scintillation, Radionuclides, Digital transformation |
| Image:  (To get the best out of your collections you should provide a photo that is: at least 300 x 300px square, has your face centered, has a plain background) |

**If there are Co-guest editors, please list the same required information here.**

# **Part** **2: Information for Collection**

|  |
| --- |
| **Collection Title: Digital Transformation in Particle Physics** |
| **Open for Submission:**   * **From: September 1 2025** * **End: September 1 2026**   NB: We encourage you to set the Open for submission date as for now. For the submission end date setting, generally, 9 months from the start date, you may propose a submission deadline for your Topical collection that you preferred, our editorial office will also assist to adjust the submission deadline according to the whole plan for the Journal’s Topical Collection project when needed. |
| **Description:**  Particle physics is entering a new digital era—one that demands not only breakthroughs in fundamental science, but also innovation in how data, instrumentation, and knowledge are structured, shared, and interpreted. This article collection will focus on case studies and initiatives that illustrate how digital transformation is accelerating research and fostering collaboration across the global particle physics community.  The collection aims to showcase how research teams are advancing the **FAIR principles** (Findable, Accessible, Interoperable, and Reusable), integrating **AI models**, and promoting **Open Science** by sharing experimental metadata, analysis workflows, and software through open, interoperable repositories. While the community has long led the development of **machine-actionable data formats** for Monte Carlo simulations, the next frontier involves achieving **semantic and metrological traceability**, ensuring **compliance with the International System of Units (SI)**, linking data to **web ontologies**, and enabling **unambiguous, trustworthy machine-to-machine data exchange** in collaborative, web-based environments.  Contributing authors and editors will bring together a diverse set of articles addressing key aspects of digital transformation—including advancements in **digital electronics**, **AI integration**, **digital twins**, **intelligent sensor networks**, and the implementation of **standardised data models** across multiple domains. These range from **high-energy physics**, **astrophysics**, and **nuclear medicine** to **environmental monitoring**, **industrial applications**, and **radionuclide metrology**. All contributions will center on systems involving the **detection and measurement of ionising particles**.  Through this collection, we aim to chart a roadmap for the digital future of particle physics—one that is open, interoperable, trustworthy, and rigorously traceable.  You can see an example via the link: <https://link.springer.com/collections/dfeaggacbh> |
| **Keywords:**  **Digital Transformation, FAIR Principles, Particle Physics, Open Science, Digital Twin, Sensor Network, Web Ontology, International System of Units**  [Please provide a list of relevant keywords (5-10) for the Topical Collection] |

# **Part 3: Regular Questions**

**Please provide your answers for the following 7 questions:**

**Question 1:** Does the proposed Guest Editor agree to the responsibilities outlined in below?

Collection Guest Editors are the scholars who have embarked on an independent research career. At a minimum, Collection Guest Editors are involved in soliciting papers, in writing a short description of the Collection to be featured on its homepage, and in making final decisions on submissions from their Collections. Guest Editors are supported by editorial office staff for administrative tasks.

Specific Guest Editor responsibilities are:

* To suggest a topic for the Collection and advise on its scope.
* To identify authors for the Collection.
* To invite submissions via email (via editorial staff if preferred).
* To consider non-invited articles that are submitted to the Collection.
* To act as an advocate for the Collection to attract high-quality submissions.
* To check whether submissions fall in the scope of the Topical collection and to make the final decision on whether a paper can be published after peer-review and revisions.
* To write an introductory Editorial article (optional).

Your Answer:

Yes, I am fully aware of this and will comply.

No, I will not comply with this part.

**Question 2:** We kindly request that publications authored by scholars other than the Guest Editors constitute more than 75% of each Collection, in accordance with [DOAJ guidance](https://doaj.org/apply/guide/#special-issues).

Your Answer:

Yes, I am fully aware of this and will comply.

No, I will not comply with this part.

**Question 3:** Could you provide a list of **potential authors/research groups** who may be interested in submitting to your Topical Collection? (Please note that potential authors *should not be* invited to contribute at this stage) We aim to gather a diverse, interesting, and up-to-date selection of publications, ideally 4-6 contributions from scholars worldwide.

Your Answer:

Yes, I am fully aware of this and will comply.

No, I will not comply with this part.

**Question 4:** Please provide a version of the above description that is limited to 2 sentences, covering in a succinct way the scope of the Collection.

Your Answer: This article collection explores how digital transformation is reshaping particle physics through case studies focused on open science, FAIR principles, and machine-actionable data. Contributions span domains such as high-energy physics, astrophysics, nuclear medicine, and metrology, highlighting advances in digital twins, semantic traceability, and SI-compliant data exchange for systems detecting ionising particles.

**Question 5:** Is the proposed Collection of regional or global interest? Why?

Your Answer: The proposed collection holds global relevance, as digital transformation must be internationally coordinated to effectively implement Open Science practices and uphold the FAIR principles.

**Question 6:** Is there an upcoming conference or other event related to the proposed Collection?

Your Answer: No

**Question 7:** Is there anything else you would like us to know? Do you have any additional information to share that could be used to help promote the proposed Collection?

Your Answer: No