



'Physics with Industry 2019' workshop: companies' and organisations' application

Workshop

The annual workshop 'Physics with Industry' (PwI) is jointly organized by NWO (Netherlands Organisation for Scientific Research) and the Lorentz Center in Leiden. The workshop is intended to encourage cooperation and exchange of knowledge between academia and industry. In a stimulating setting at the Lorentz Center in Leiden, scientists and researchers from both academia and industry work closely together for one week to find original solutions to challenging industrial problems.

This year, the event will take place from **18 November** to **22 November 2019** at the Lorentz Center in Leiden.

Why should you apply?

This workshop offers your company the opportunity to have a **dedicated team** of highly motivated physicists from universities and research institutes that will spend a full week to tackle your specific problem. The teams consist of PhD students and postdocs, and will be led by a number of senior academic scientists. The teams are composed of physicists with different backgrounds, ensuring the problems will be approached from different angles. Researcher(s) from your company are asked to be present and actively participate during the full week, providing the team with relevant input, and ensuring that proposed solutions remain realistic and practically feasible.

You can therefore expect to make significant progress towards a practical solution for your problem. In addition, your company's academic network will be strengthened, possible new cooperation projects may be initiated and you will meet possible future employees. Since its start in 2010, this annual workshop has proved very successful in all these areas.

Application procedure

Any company and non-government organization can apply by filling in the application sheet attached to this document. A total of five

cases will be selected by an academic programme committee, composed of leading scientists from different fields of physics. The cases will be selected according to the following selection criteria:

1. Is the problem urgent?
2. Is the problem scientifically challenging, particularly from a physics perspective?
3. Is it likely that a solution to the problem or significant steps towards a solution can be obtained within the timeframe of one week?
4. Can the company provide enough information during the week to allow useful results to be obtained?

In order to increase the chances of being selected, it is recommended that a senior academic scientist is involved in the application. In case this proves difficult for you, the organization can assist you in connecting you to possible interested scientists. Your application should be sent before **14 May 2019, 14:00 (CET)** to the following email address: physicswithindustry@nwo.nl. Your application should be submitted together with a non-disclosure agreement (NDA).

Preparation before the workshop week

Should your problem be selected, you will be invited for a preparatory meeting together with the senior academic scientist and one of the organizers. The selected problem proposals will be shared with the participants, after a the proposal is adapted to be fit for publication. The participants will have the possibility to choose their first and second most preferred problem. Prior to the workshop, the Physics with Industry organization assigns each participant to one specific problem, thus forming five teams of

approximately ten people (including a company representative and a senior academic scientist). Relevant literature and documentation will be made available to the participants, so that the teams can prepare and start the workshop with a reasonable amount of background knowledge.

The dedicated team will be visiting the company site on **Thursday 14 or Friday 15 November 2019**. The visit is crucial for the full appreciation of the company problem and the workshop as the participants can put the challenge posed by the company in the right perspective. It is the responsibility of your company to organize this visit.

Confidentiality agreements and intellectual property

The main purpose of the workshop is the exchange of knowledge between industry and academia, and generated results are intended to be public. To stimulate a free flow of information, all participants will sign a non-disclosure agreement (NDA) to enable information protection. Therefore, you will have to ensure that your company agrees with the NDA as soon as your case has been submitted. The signed document should be submitted together with your application.

Program of the workshop week (for a detailed preliminary program see page 4)

The workshop starts on Monday morning with a plenary presentation of the five company problems. In the afternoon the separate teams start to work on their individual cases. Usually, after some more detailed input from the company and an expert lecture, the teams brainstorm and divide into subgroups to tackle possible solutions. In a brief plenary session on Wednesday the 'midterm' solutions are presented. On Friday, the teams will present their final results to the entire group. In addition, the evenings provide ample opportunity to meet with the participants of the other teams and to exchange ideas.

Schedule

19 February 2019	Open call for company cases
14 May 2019	Deadline for submitting company cases
28 May -11 June 2019, deadline 11 June	Selection of five company cases by the Programme Committee
July 2019	Assign academic partner for each company case
July-September 2019	Preparatory meetings companies-NWO case coordinator
19 August 2019	Open registration for participants
21 October 2019	Deadline participants registration
October 2019	Selection participants and assignment to company teams
14/15 November 2019	Company visits (organised by the company)
18-22 November 2019	Physics with Industry 2019 workshop at Lorentz Centre

Costs

The workshop is funded by NWO and the Lorentz Centre and the participating companies.

Companies with more than 50 employees contribute € 2.500 (excl. VAT) *in cash* to the workshop, for smaller companies the *in cash* contribution is € 500 (excl. VAT). Lunches, the welcome party on Monday and dinners as mentioned in the preliminary programme are included in this fee. Lodging and other costs related to the workshop are not included in this fee.

Number of participants expected

The organisation aims at 40 participants (PhD students or postdocs), at least one senior researcher from academia and one or two supervisors from the participating companies for each case, viz. 55 participants all together.

Contact

For applications and questions, email: physicswithindustry@nwo.nl.

¹ Sometimes it is appropriate to protect the generated results by intellectual property rights. Intellectual property rights will be owned by the employer(s) of the person(s) generating such intellectual property.

Format case proposals workshop 'Physics with Industry'

The deadline for submitting problem proposals (via email to physicswithindustry@nwo.nl) is **14 May 2019, 14:00 CET**. The proposals have to be structured according to the format below. The language should be English and the exact titles of the paragraphs should be used. The proposal should have a maximum length of two pages A4.

1. Title

The title is short, but clear; no elaborate description.

2. Applicant(s)

Name(s) of the applicant(s) and company as well as address, email and phone number.

3. Suggestion for academic team leader

Give possible name(s) of senior academic researcher(s), including contact information. The senior scientist will be a sparring partner during the preparations of the workshop and he/she will be the team leader during the workshop.

4. Company information

Brief introduction (max. 100 words) to the company (mission, size, turnover, R&D activities, sales area). Please add a company logo (as separate jpg or eps file).

5. Problem

Description of the physics related problem (about 500 words) that could be discussed at the 'Physics with Industry' workshop. Please give attention to the following aspects too:

- the background and urgency of the problem;
- why you need help from the physics community;
- which physics disciplines you expect to be relevant to solve this problem;
- graphs, pictures, references etc.;
- possible solutions or directions toward solutions to the problem;
- boundary conditions (e.g. technical, organisational, or budgetary requirements).

Please note that the participants of the workshop will have different backgrounds (Nanophysics, Condensed matter and optical physics, Physics of life science, Phenomenological physics, Subatomic physics) and experience level (PhD student to professor).

6. Input for workshop participants

Describe to what extent you will provide workshop participants with details (numbers, experiences, models, software etc.) and to what extent details are confidential. In general, the more information you provide, the higher your 'return on investment'.

Please note

The information of this proposal will be used as input for public discussions during the workshop 'Physics with Industry'. It may also be used for outreach and promotion activities regarding the workshop.

Physics with Industry 2019 workshop programme

Plenary sessions are marked with *.

Thursday 14/Friday 15 November

10.30-14.00 Company visit (organized per company group)

Monday 18 November

09.30-10.00 * Reception with coffee and tea
10.00-10.30 * Welcome by Organising Committee
10.30-12.00 * Problem presentations by companies
12.00-13.00 * Lunch
13.00-14.00 * Problem presentations by companies
14.00-14.30 * Coffee and tea
14.30-14.45 * Dividing into groups and room
14.45-17.00 Initial group discussions with company representatives
17.00-20.00 * Wine & Cheese welcome party

Tuesday 19 November

09.00-12.00 Group discussions
12.00-13.00 Lunch
13.00-18.30 Group discussions
18.30- * In house workshop dinner

Wednesday 20 November

09.00-10.00 * Mid-term presentations and plenary discussions
10.00-12.00 Group discussions
12.00-13.00 Lunch
13.00-17.30 Group discussions
18.00- * Workshop dinner and a museum visit

Thursday 21 November

09.00-12.00 Group discussions
12.00-13.00 Lunch
13.00-18.00 Group discussions
18.00- (*) In house working dinner during final group discussions

Friday 22 November

09.00-10.30 Preparations for presentations by the groups
10.30-11.00 * Coffee and tea
11.00-11.45 * Presentation and discussion results company 1
11.45-12.30 * Presentation and discussion results company 2
12.30-13.00 * Lunch and group picture
13.00-13.45 * Presentation and discussion results company 3
13.45-14.30 * Presentation and discussion results company 4
14.30-15.15 * Presentation and discussion results company 5
15.15-15.45* Award best presentation and closing

