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## Women in Physics in the Netherlands: progress and developments

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### Abstract

The visibility of women and the awareness of a healthy gender balance in physics in the Netherlands have clearly improved over the last years. Initiatives to promote women and their possibilities to pursue a career in physics are plentiful and commendable. Nevertheless, the numbers do not yet show the desired impact of all these initiatives. Although student numbers have increased, the percentage of female first-year student remains at approximately 13 percent of the total students in physics. Similarly, the relative numbers of female PhD candidates and postdocs have been stable over the last years at (both) approximately 20 to 25 percent. Despite the number of women obtaining a PhD in physics and continuing a scientific career as postdoc, the presence of women further up on the scientific ladder in physics remains strikingly low. Especially after PhD and postdoc, there is a big 'drop-out' of women from science. For example within FOM, the Dutch Foundation for Fundamental Research on Matter, the percentage of women in positions beyond postdoc is currently 9 percent, where it was 7 percent in 2010 but 11 percent in-between. We will here focus on the current status, ambitions, and initiatives in the Netherlands to promote women, and especially to *keep* them, in physics.

### Recent developments and numbers:

Total numbers of physics student at Dutch colleges and universities have steadily increased since 2007. However, the aim to enhance the percentage of female students is not realised, and women unchangingly make up approximately 13 percent of the total physics student population (Table 1). Similarly, relative numbers of female PhD candidates and postdocs have been stable over the last years at (both) approximately 20 to 25 percent. Although the number of women obtaining a PhD in physics and continuing a scientific career as postdoc may seem relatively high, it has been steady over the last years, and the presence of women further up on the scientific ladder in physics remains strikingly low.

Table 1. Percentages of female first-year students at all colleges and universities, and PhD candidates, postdoc researchers, and permanent staff employed at FOM (the Dutch Foundation for Fundamental Research on Matter), over 2010 to 2013. Note that at the level of

permanent scientific staff, researchers are mainly employed at universities and research institutes; permanent staff at FOM includes scientific staff at FOM research institutes, but mainly comprises of non-scientific staff. The group leaders related to FOM comprise assistant, associate, and full professors at universities and research institutes, giving an impression of the percentage of women amongst permanent scientific staff.

	2010 (%)	2011 (%)	2012 (%)	2013 (%)
First-year students at all colleges plus universities	12	12	13	14
PhDs at FOM	23	23	23	24
Postdocs at FOM	20	20	20	25
Permanent staff at FOM	8	10	9	8
Group leaders (scientific staff) related to FOM	8	10	10	10

Current initiatives supporting women in physics or in science in general in the Netherlands:

- The government funded joint mission-statement and plans of the sectors Physics and Chemistry formulates clear ambitions and targets for the male/female balance in physics and chemistry for the future. It facilitates 88 tenure track positions (from 2011 till 2016), with a target of 40 percent to be filled by women. To achieve this, 20 of the 88 positions are specifically reserved for women.

- The Foundation for Fundamental Research on Matter (FOM) supports women in physics through several instruments:

\* Through the FOM/f program, FOM provides grants (for postdoc positions, and to support the promotion of women to tenure positions), awards the bi-annual Minerva Prize for the best physics paper by a female author, offers individual coaching for PhD students, and organizes the FOM/f symposium for all women in physics in the Netherlands.

\* A new initiative in 2014 is the FOM-mentoring programme, to support female physicists in tenure track positions or early stage group leaders in building their career in science. This should contribute to the ambition of FOM to achieve '20% in 2020'; in the year 2020, 20 percent of the top-positions (assistant professor and up) should be occupied by women.

\* Further, FOM is starting to offer a training on gender-bias, specifically for researchers as employers, to improve their awareness of potential gender-bias in selecting new academic staff.

- The Netherlands research foundation (NWO) offers Aspasia grants to enable the promotion of female scientists from assistant professor positions to associate or full professor.

- Several universities offer fellowships especially for women to improve their possibilities to pursue an academic career in physics through tenure-track subsidies. (Rosalind Franklin Fellowships - Groningen, Tenure track programme - TU Eindhoven, MacGillavry Fellowships - Amsterdam, Technology Fellowships - TU Delft).

- The Dutch Network of Women Professors (LNVH) is a network of over 850 female professors and associate professors. Together they represent every discipline and all Dutch universities, promoting the visibility and opportunities for women in academia in the Netherlands.

Although there seems no lack of initiatives, awareness amongst and an active contribution from the entire community is still needed to improve the gender balance in physics; it doesn't come naturally!