

## Activities in History of Mathematics in Utrecht and Leiden in the year 2009

Contents:

- Personnel
- International Service
- Publications
- Lectures
- Media
- Visits
- Visitors from abroad
- Organisation of conferences
- Honours and Awards
- Courses, Bachelor Theses and Master Theses related to the History of Mathematics
- Courses (not history-related)

### Personnel

Steven Wepster (SW): “Junior universitair docent” (0,5 fte Jan. 1- Apr. 30, 0,8 fte May 1 - August 30), “Universitair Docent” (Sept. 1, - Dec. 31), Department of Mathematics, UU

Dr Kim Plofker (KP) was a postdoctoral fellow from Sept. 1, 2004 - Sept. 1, 2006, at the Department of Mathematics, UU, sponsored by NWO. Some of her publications which were written in that period appeared in 2009 and are mentioned in the list of publications.

Liesbeth de Wreede (LW): Jan. 1, 2009 - Dec. 31, 2009: Official (un-salaried) guest of the Mathematics Department (History of Mathematics Research Group), UU, 0.0 fte.

Jantien Dopper (JDo): Jan. 1, 2009 - Dec. 31, 2009: Ph.D. student (AIO) at the Department of Mathematics, UU.

Jeanine Daems (JDa): Jan. 1, 2009 - Nov. 31, 2009 (?): Ph. D. student (AIO) at the Department of Mathematics, University of Leiden.

Hüseyin Şen (HS): Jan. 1, 2009 - July 31, 2009: Student assistant in History of Islamic Science (0,2), working with JH.

Jan P. Hogendijk (JH), Jan. 1, 2009 - , Professor of History of Mathematics in Utrecht University (0,5 full professor, 0,3 associate professor until Sept. 1, 0,5 associate professor from Sept. 1 onwards) and in Leiden University (0,2 full professor, expiring on Sept. 1, 2009).

Henk Hietbrink, mathematics teacher at the Cals College in Nieuwegein, worked from Sept. 1, 2007 - August 31, 2009 for one day per week on a “teacher in research” program, funded by NWO, on the preparation of educational material on 17th-century Dutch mathematics for highschool students in mathematics. The project was jointly supervised by Prof. Dr. Jan van Maanen (Freudenthal Institute for Mathematics and Science Education) and JH. In addition, Mr. Hietbrink also participated in the supervision of B.Sc. and M.Sc. students in the course and seminar on History of Mathematics as part of a Sprint-Up activity.

Mr. Goossen Karssenbergh, mathematics teacher in Den Helder, will start working on a “teacher in research” project in Islamic tilings, funded by NWO, on September 1, 2009.

The following students deserve special mention, because they have participated on a regular basis in teaching, travelling, giving lectures etc.

Mr. Hüseyin Şen, masterstudent History and Philosophy of Science,

Mr. Wilfred de Graaf M.Sc. (mathematics), master student Physics,

Mr. Eric van Lit, bachelorstudent Mathematics, Arabic, and Liberal Arts and Sciences.

## **(International) Service**

JH is executive Member, Academie Internationale d’Histoire des Sciences

JH is a member of the editorial board of the following journals in the history of science:

- Ganita-Bharati (Delhi, ISSN 0970-0307),
- Istoriko-Matematicheskii Issledovaniya (Moscow, ISBN 5-8037-0291-9),
- Suhayl (Barcelona, ISSN 1576-9372),
- Centaurus (Aarhus, ISSN 0008-8994),
- Zeitschrift für Geschichte der arabisch-islamischen Wissenschaften (Frankfurt, ISSN 0179-4639),
- Historia Mathematica (Amsterdam-San Diego, ISSN 0315-0860),
- Ta’rikh-e Elm (Tehran, ISSN 1735-0573),
- Journal for the History of Arabic Science (Aleppo, ISSN 0379-2927),
- Early Science and Medicine (Leiden, ISSN 1383-7427).

JH is reader of the Ph.D. dissertation of Mrs. Noor van Krimpen-Winckel, “Honorable Homes: Design and Meaning in Pompeian Private Architecture.” Leiden University; public defense Feb. 4, 2009.

## Publications

M. Bagheri, *Az-Zīj al-Jāmiʿ by Kūshyār ibn Labbān: Books I and IV. An Arabic astronomical handbook*. Edited, translated and commented by Muhammad Bagheri. Frankfurt: Institute for the History of Arabic-Islamic Science, 2009. ISBN 978-3-8298-4124-5. Publications of the Institute for the History of Arabic-Islamic Science, Islamic Mathematics and Astronomy, vol. 114. [Ph.D thesis, defended in Utrecht in 2006; ISSN of the series 1437-5125] 51 + 225 + 172 (= 448) pp.

JH: Al-Kashi's determination of pi to 16 decimals in an old manuscript, *Zeitschrift für Geschichte der arabisch-islamischen Wissenschaften* 18 (2009), 73-152. ISSN 0179-4639

Kim Plofker, *Mathematics in India*, Princeton University press, 2009, xi + 357 pp., ISBN 978-0-691-12067-6. This book was written in Utrecht between 2004 and 2006 in the context of the NWO-project Mathematics in India, 500 BCE - 1800 CE, with special emphasis on its relationship with Islamic mathematics (750 - 1800 CE)." (MATHINDI, 613.000.430)

JH: Ludolph van Ceulen en zijn boek *Vanden Circkel*: schermutselingen rond het getal pi, in Jan Bos en Eric Geleijns, ed., *Boekenwijsheid: Drie eeuwen kennis en cultuur in 30 bijzondere boeken*, Zutphen: Walburg Pers, 2009, pp. 13-20, ISBN 978.90.5730.625.9

JH: Lijfrentes in de zeventiende en achttiende eeuw, in: *Tel uit je winst, wiskunde in geld en spelen: Vakantiecursus 2009*, ed. J.M. Aarts, Amsterdam 2009, CWI Syllabus 59, p. 91-101 ISBN 978.90.6196.551.0 (90.6196.551.9).

JH: Arabische astrologie en West-Europese wiskunde, *Nieuw Archief voor Wiskunde*, vijfde serie, 10 nr. 3 (sept. 2009), pp. 191-196, ISSN 0028-9825.

JH: Over echte en fictieve personen in de *Herscheping van de Wereld* van Floris Cohen: Ibn al-Haytham, al-Toesi, al-Kepler en al-Galilei, *Studium: Tijdschrift voor Wetenschaps- en Universiteitsgeschiedenis* volume nr. 3 (2009), 133-140. ISSN 1976-9055.

JH: De Utrecht Zij, in: *Bijzonder Onderzoek. Een ontdekkingsstocht door de Bijzondere Collecties van de Universiteitsbibliotheek Utrecht* ed, M. van Egmond, B. Jaski, H. Mulder, Utrecht, Universiteitsbibliotheek Utrecht, 2009, p. 144-147 ISBN 978 90 400 7657 2.

JH: Iranian mathematics in the Netherlands in the 17th Century, in: Martine Gosselink and Dirk J. Tang, ed., *Iran and the Netherlands: Interwoven through the ages*, Gronsveld and Rotterdam: Barjesteh van Waalwijk van Doorn & Co's Uitgeversmaatschappij, 2009, pp. 161-166. [including Persian translation: riyāziyyāt-e irān dar holand gharn-e hefdahom.] ISBN 97890 5613 0985.

SW: Diophantische Vergelijkingen: een wiskunde-D module van de UU *Euclides* 84 no. 6 (april 2009) SW: Ludolph van Ceulen, 1540-1610: In de ban van de cirkel. *Euclides* 85 no. 3 (december 2009), pp. 98-100.

SW: review of J.H. Derks, *Cursus door zes eeuwen wiskunde* (2009), in *Euclides* 85 no. 3 (december 2009), p. 133.

## Lectures

- January 22-23, JDo, De familie Van Schooten, wiskunde in de zeventiende eeuw. Promovendicongres wetenschapsgeschiedenis, Huizinga Instituut, Rolduc.
- Friday Feb. 6, 15:30-17:00: Frits Veerman, Maria Velema, workshop “Verre wiskunde: Rekenmethoden in het oude China”, Nationale Wiskundedagen, Noordwijkerhout. [On methods of computation in ancient China - the workshop is a product of the seminar on science in ancient China, spring 2008.] 60 participants.
- Saturday Feb. 7. workshop “plaatsbepaling met de sterren” (finding one’s locality by means of the stars), Nationale Wiskunedagen, Noordwijkerhout.
- Sunday, February 21, JH with Wilfred de Graaf, Mohammad Bagheri (translator), workshop on the Zawraqi astrolabe. University of Tehran, History of Science Department, 35 participants.
- Monday, February 22, JH, lecture “The Eastern sources of Mathematics and Science in Concrete Examples” [on Babylonian clay tablets]. University of Tehran, Department of Mathematics.
- Saturday, February 28, JDo, “The trisection of the angle in the work of Frans van Schooten jr.”, Oxford, Meeting: Research in Progress, organized by the British Society for the History of Mathematics.
- Saturday, February 28, JH with Wilfred de Graaf, Mohammad Bagheri (translator), workshop on the Zawraqi astrolabe. Rasht, Gilan Astronomical Society, 50 participants.
- Tuesday, March 3, JH with Wilfred de Graaf, Mohammad Bagheri (translator), workshop on the Zawraqi astrolabe. Isfahan, University of Arts, 100 participants.
- Wednesday, March 4, JH with Wilfred de Graaf, workshop on the Zawraqi astrolabe, for 20 students from Zahedan and Chahbahar. Isfahan, House of Mathematics.
- Wednesday, March 4, JH: speech at the 10th anniversary of the House of Mathematics, Isfahan, Central Library.
- Saturday, March 7, JH: “Grenzen verkennen en verleggen” (partly historical) lecture held twice at the Ouderdag (Parents Day), organized by the student association A-Eskwadraat, Utrecht.
- Tuesday, April 14, JH: Bernoulli-lezing: “Arabische astronomie en Westeuropese wiskunde,” Rijksuniversiteit Groningen, Aula, 20:15-21:15.

- May 16-17: Workshop “Islamic Tilings” (developed in 2006 under supervision of JH by the students Michiel Kwetters, Aldine Aaten and Jeanine Daems) was presented by Aldine Aaten and others in the HULDA festival in Amsterdam. The same workshop was held in May and June 2009 ten times in the NEMO science center in Amsterdam, with the cooperation of the student Wilfred de Graaf.
- Friday, May 29, SW: “How Horrock’s orbit entered into Mayer’s tables.” International Symposium *The Moon in the 17th century*, Chateau de Versailles.
- Saturday, June 27, SW: “Ludolph van Ceulen in Hollandse kringen,” and JDo: “Ontwikkeling in het onderwijs in de Duytsche Mathematique aan de Leidse universiteit in de zeventiente eeuw,” Session: Wiskunde in de Gouden Eeuw, Third Bi-Annual Dutch Conference in the History of Science: Dutch Science - World Science, Woudschoten (Zeist).
- Tuesday, July 7, JH: “Omar Khayyām and Isfahani Geometrical Art,” Conference: The Legacy of Omar Khayyam, Leiden University.
- Monday, August 17, Wilfred de Graaf: workshop “the astrolabe” for a group of mathematics teachers from Yemen, who visited the Netherlands in the context of the MASTERY project (Mathematics and Science Teacher Education Reform in Yemen) of the Free University of Amsterdam (supervised by Dr. Arnoud Pollmann).
- Saturday, August 22 and Saturday, August 29, JH: “Lijfrenten in de 17e en 18e eeuw” (Annuities in the 17th and 18th centuries), Amsterdam, Centrum voor Wiskunde en Informatica, and Eindhoven, Technische Universiteit, in the Vakantie cursus Wiskundeleraren 2009.
- Wednesday, September 30. Workshop: “The Astrolabe” by Wilfred de Graaf, for university administrators, University of Utrecht.
- Tuesday, October 13: JH, lecture: “Astrology” in the course “The Unity of Sciences” (Utrecht University, organized by the Philosophy Department)
- Friday and Saturday, October 23 and 24, together with Andre Henriques, “Gekromde ruimtes” [curved spaces], masterclass for talented highschool students, Utrecht.
- Wednesday, November 5, JDo, Géométrie and Geometria: The focus of Van Schooten, *Novembertagung* in history of mathematics, University of Twente.
- Saturday, November 7, SW with Liesbeth de Wreede, Ludolph van Ceulen’s and Willibrord Snellius’ Arithmetical and Geometrical Foundations, *Novembertagung* in history of mathematics, University of Twente.

- Saturday, November 7, JH's intended lecture about Brahmagupta's quadrilaterals at the conference on Transmission of Mathematics in München was cancelled because of illness
- Saturday, November 14, Goossen Karssenbergh (Teacher in Research), "Islamitische mozaïeken uit de middeleeuwen als lesmateriaal", Bart Post, Maartje van der Veen, (students concrete geometry and history of mathematics): workshop: Muqarnas (gewelven in de Islamitische architectuur)  
Utrecht University, Ars et Mathesis day (foundation Ars et Mathesis, [www.arsetmathesis.nl](http://www.arsetmathesis.nl)) (audience: 100 people, many of whom are mathematics teachers)
- Thursday, November 26, Jan Beuving (M.Sc. student in history of science) Voor elk wat Wils (colloquium on his M.Sc. project on Pieter Wils), Utrecht.

## Media

- Thursday, April 16, JH: Radio-interview in the program "Hoe?Zo!", Teleac, Radio 5, between 21:00 and 22:00 h (about the Bernoulli-lezing of April 14).
- Tuesday, August 25, JH: One-hour radio interview in the program "Hoe?Zo!", Teleac, Radio 5, 21:00 - 22:00, on JH's "scientific hero" Abū Rayḥān al-Bīrūnī (973-1050).
- August, JH: 30-minutes interview with the Turkish TV-channel Samanyolu (Frankfurt am Main, [www.samanyolutv.eu](http://www.samanyolutv.eu)), on the work of Prof. Fuat Sezgin. (Interview taken in Frankfurt on August 14)

## Visits

- Jan. 27-29: Frankfurt, Institut für Geschichte der arabisch-islamischen Wissenschaften: JH with Eric van Lit.
- Feb. 19 - March 5: Iran: Tehran, History of Science Department; Rasht, Gilan Astronomical Society; Bandar-e Anzali, House of Mathematics; Isfahan, House of Mathematics. JH with Wilfred de Graaf.
- April 13 - May 6, Aarhus, History of Science Department, JDo (to visit Prof. Henk Bos and Prof. Kirsti Andersen)
- April 22-24: Frankfurt, Institut für Geschichte der arabisch-islamischen Wissenschaften: JH with Hüseyin Şen.
- May 29-30, Symposium "The Moon in the 17th century", Chateau de Versailles : SW.

- August 12-15: Frankfurt, Institut für Geschichte der arabisch-islamischen Wissenschaften: JH with Hüseyin Şen and Eric van Lit.
- August 27-29: Gent, Conference: Philosophical Aspects of Symbolic Reasoning in Early Modern Science and Mathematics: JDo.
- November 4-8, *Novembertagung*, University of Twente, SW, JDo, LW

### Visitors from Abroad

- February 6: Dr. Benno van Dalen (Frankfurt/München)
- May 28: Dr. Eisso Atzema (Orono, Maine, USA).
- July 8-9: Dr. Mohammad Bagheri (Encyclopaedia Islamic Foundation, Tehran, Iran)
- August 15-19: Dr. Kim Plofker (Union College, Schenectady, USA)
- November 19: Dr. Benno van Dalen (Frankfurt/München)
- December 4: Prof. Dr. Henk Bos (Aarhus, Denmark)
- December 21: Dr. M. Bagheri (Tehran)

### Organization of Conferences

JDo was one of the organizers of the (yearly international) *Novembertagung* in the history of mathematics, which took place between November 4 - 8, 2009 at the Campus of the Technical University Twente, Netherlands. The two other organizers were Arjen Dijkstra and Tim Nicolaije, University of Twente.

### Honours and Awards

- JH is Adjunct Professor in the History of Science Department of Tehran University.
- Eric van Lit (who finished his bachelor thesis in the history of mathematics in 2008) was admitted to the program in Islamic Studies in McGill University, Toronto, Canada, as of September 1, 2009, and he has been awarded a Huygens Scholarship Program Grant by the Dutch government.

### Courses, Bachelor Theses and Master Theses related to the History of Mathematics

- Master thesis: Jan Beuving, Pieter Wils' *Wiskonstige Werken* [The mathematical works of Pieter Wils (ca. 1600-ca. 1650)], M.Sc. Thesis in History and Philosophy of Science (52,5 ECTS), August 2009, supervised by JH

- Bachelor thesis: Pascal van Beek, "A mathematical analysis of the mosaic on the shrine of Imamzadeh Shahzadeh Hossein in Kerman Province, Iran" (on a cupola in the city of Jupar), May 2009, supervised by JH.
- Bachelor thesis ("Bachelor-scriptie"); Rosa Runhardt, De Interestrekeninghe van Ludolph van Ceulen. June 2009, Department of Mathematics, University of Leiden, supervised by JH.
- JH was reader ('tweede beoordelaar') of Mattias Noback, Berheleys *The Analyst* voor Filosofen, Master Thesis, Department of Philosophy, University of Utrecht, supervised by Prof. Piet Steenbakkers, exam date September 6, 2009.
- Essays written by (33) participants who passed the course "History of Mathematics" (WISB 281, 7.5 ECTS credits), Utrecht, Fall 2008, taught by SW; most essays were written in Spring 2009:
  - M Kuijpers en A Ponstein, "Perfecte getallen."
  - A van Kimmenade en A Streefland, "Lichtelick ende Slichtelick – Een studie naar de invloed van Simon Stevins 'De Thiende' "
  - Albert Oude Nijhuis, W Fracheboud, "De notatie van de differentiaalrekening: De bijdrage van Leibniz en Lagrange."
  - S de Harder en Patrick van Stiphout, "Infinitesimalrekening van Newton en Leibniz."
  - A Baars en Auke Mollema, "Van Rekeningh in Spelen van Geluck: een bijdrage voor VWO-kansrekening."
  - Sabine Oudt, Florian Klück, Arno Luc Ackermann, "Over de invloed van de Islam op de wiskunde."
  - Roelof van Dijk en J de Graaff, "Het juweel van de wiskunde: De 'identiteit van Euler'."
  - Hanna van Boven en Wouter Duivesteijn "Probability versus possibility; introducing uncertainty in the 18th and 20th century."
  - P Rogaar en D van Kekem, "De receptie van Gödels onvolledigheidsstellingen."
  - H Tops en M Mulder, "Pythagoras en zijn wiskunde."
  - Maartje Singendonk en Dick van Dam, "De *Mathematische Oeffeningen* van Frans van Schooten". [partly supervised by our "Teacher in Research" Henk Hietbrink]
  - A Brombacher en A-J Gerrits, "Girolamo Cardano: Een overzicht van het leven en werk van een 16e eeuwse wiskundige."
  - C Huizinga en Jana Endemann, "Goden van de Wiskunde: Over Geloof en Wiskunde in de 17e eeuw."
  - Folkert Fokkema en Eva Oerlemans, "De laatste stelling van Fermat."

- E Looijenga en Claire Dulfer, “De Negen Hoofdstukken van de wiskundige kunst versus de Elementen van Euclides en de invloed op de Chinese wiskunde.”
- Amy Besamusca en Z Kluit, “Babylonische Sterrenkunde: Systeem A.”
- Essays written by the participants of the course “History of Mathematics”, Leiden, Fall 2008, taught by JH (essays turned in in early Spring 2009).
  - Kees de Graaf, Teus de Koning, Jan Rozendaal, “Kurt Friedrich Gödel.”
  - Anco Moritz, “Russell’s paradox: the origin and some proposed solutions.”
  - Rosa Runhardt, “Het leven en werk van Évariste Galois.”
  - Veerle Hisken, “Wetenschap en burgerzaken: De Leidse ingenieursschool in de 17<sup>e</sup> eeuw.”
  - Youssef Achnine, Stefan Pouwelse, Rick Vooy, “De bijdrage van Euler aan het functieconcept.”
  - Two more students. Mr. Jim van Mechelen, and Mr. Robert Eggermont, audited the course.
- Essay written for the course “Kaleidoscoop van de Wiskunde’: Faranaaz Rogier, Thomas Visser, Een hyperharmonische ontwikkeling [on Euler’s discussion of  $\sum_{n=1}^{\infty} \frac{1}{n^k}$  for  $k$  even, in particular  $k = 2.$  ], Supervised by JH
- Essays written for the Master course Historical aspects of classroom math (WISM 482, 7,5 ECTS credits), taught in spring 2009 (periods 3 and 4) by SW:
  - Trudy van der Kolk, Cora van den Heuvel, Els Durieux, De Sector van Galileo. [lessons for mathematics students of teacher training colleges]
  - Jan Beuving, Hugo Duivesteijn, Wouter Duijvesteijn, Regelmatige veelvlakken: veelzijdiger dan je denkt. [Exhibition on regular polyhedra, for highschool students, grades 1 and 2]
  - Hind Shouli, Denise Mandemaker, Daniëlle Rimmelzwaan, Module derdegraadsvergelijkingen [highschool students, 5th or 6th grade, program: Mathematics B or D]
  - Clea Matson, Serbay Zambak, Dian Kusamawati, Pythagorean Discovery: Number and Music [three posters with activities, target group: visitors to a museum]
  - Francesca Diana, Shreya Khemani, Introducing non-Euclidean Geometry in Highschool Mathematics

- Tjeerd Schuitemaker, Sietske Tacoma, Hannah Tops Kansrekening in spelletjes [lessons for VWO, third grade]
  - Jo-an Sanders, Johan de Jong, Cryptologie: een geheimzinnige strijd op leven en dood [six lessons on cryptography for highschool students, 4th-5th grade]
  - Andisheh Kamali Sarvestani, Budi Mulyono, Rafiq Mehdiyev, Research Project: Changing Perceptions Toward Mathematics [on regular polygons and tilings, using the program GeoGebra, for highschool students of ages 13-14]
  - Dikkie Burger, Margo Oomes, Anne de Haan Egyptisch rekenen [Egyptian calculation, for highschool students. 2th grade, HAVO/VWO; including Docentenhandleiding, Leerlingenmateriaal and Antwoorden]
- Essays written in the master seminar in History of Mathematics (WISM 482, 7,5 ECTS credits) on the Géométrie of René Descartes:
    - Eric van Lit, “Comparing Descartes’ La Géométrie and Discours de la Méthode”
    - Lorijn van Rooijen, “Het construeren van de oplossingen van vergelijkingen door Descartes” [Construction of solutions of equations by Descartes]
    - Anco Moritz, “Over dioptriek in Descartes’ Géométrie” [on Dioptrics in the Géométrie of Descartes]
    - Wouter Duivesteijn, “Over het tekenen van enkele geometrische krommen bij Descartes” [On drawing some geometrical curves in the work of Descartes]
    - Auke Mollema, “Driehoekslandmeetkunde op de manier van Descartes” [Triangle surveying problems solved in the way of Descartes (material for highschools)]. This essay was written under joint supervision of JH and Mr. Henk Hietbrink.
    - Marianne Hoksbergen, “Jan de Witt, staatsman en wiskundige” [Jan de Witt (1625-1672), Statesman and Mathematician]
    - Thekla Teunis, “De kus van de winterprinses” [The kiss of the winter princess]

### Courses, not history related

- From sept. 2008 - Jan. 2009, JH taught “Infinitesimaalrekening” (WISB 131), to ca. 120 students. The course consisted of two plenary weekly lectures of two hours, and two tutorials of two hours in five groups (supervised by graduate students). A total of 91 students passed the course (size: 7.5 ECTS).

- From Feb. 2009- June 2009, JH taught “Concrete Geometry” (WISB 261) together with Dr. Aad Goddijn. All 21 students passed the course (size: 7.5 ECTS)
- From sept. 2009 - Jan. 2010, JH taught “Infinitesimaalrekening A” (WISB 132), and “Infinitesimaalrekening B” (WISB 133) to ca. 125 students. The courses consisted of two plenary weekly lectures of two hours, and two tutorials of two hours in five groups (supervised by graduate students).  
A total of 104 students passed the course “Infinitesimaalrekening A” in 2009 (size: 7.5 ECTS), out of the 125 students who received a final grade for the course.  
A total of 82 students passed the course “Infinitesimaalrekening B” early in 2010 (74 by passing the first exam in januari 2010 and 8 by passing the makeup exam in march 2010), out of the 103 students who received a final grade for the course.