Revue d'Histoire des Mathématiques

Société Mathématique de France

ETH zürich

Programme Colloque de la RHM 2024
Eidgenössische Technische Hochschule Zürich

Jeudi 14 novembre

10h Frédéric Brechenmacher: *Knowing by Drawing: Geometric Material Models in 19th Century France*
11h Arrigo Pisati: *Antonio Tadini: problems, scientific progress and controversies in 19th century Italian rational hydraulics*

12h-14h: Déjeûner

14h Simon Gentil: *Articulation entre courbes et généralité à l'âge classique*
15h Murtaza Chopra
16h Sabine Rommevaux: *Les sources de l'historien pour appréhender l'enseignement de la géométrie à l'université de Paris au Moyen Age.*

19h Dîner

Vendredi 15 novembre

10h-12h
Réunion du comité de rédaction de la RHM

12h-14h: Déjeûner

14h Hala Khasiba: *Publier en informatique dans les années 1960-1970. Une étude du régime de publication de Claude Pair (1934-), fondateur du premier laboratoire d'informatique à l'Université de Nancy*
15h Damian Moosbrugger: *A Technician's Mathematics: The Case of Jost Bürgi*

Organisation: Maarten Bullynck, rédacteur-en-chef de la Revue d'histoire des mathématiques, avec le comité de réaction et Roy Wagner (ETH)

Abstracts

Jeudi 14 novembre

Frédéric Brechenmacher
Knowing by Drawing: Geometric Material Models in 19th Century France

Arrigo Pisati
Antonio Tadini: problems, scientific progress and controversies in 19th century Italian rational hydraulics

Abstract:
"Rational hydraulics [...] is still shrouded in very serious difficulties. And [...] most of the papers concerning hydraulics that came to light in recent times contain simple critical observations onalready existing works, sources of lengthy polemics that contributed little to the advancementof science."
With these words Francesco Brioschi introduced his own commentary on a posthumous memoir by Gabrio Piola, in which he retraced the development of rational hydraulics in the previous century. Brioschi also pointed out how the theoretical and empirical aspects could not be combined, as if to indicate the impossibility of defining a sufficiently comprehensive theory capable of describing fluid motion.
This issue was not of secondary importance in Italy, which at the beginning of the 19th century found itself having to implement a water network for navigation, trade and irrigation. The construction of a navigable canal between Pavia and Milan (Naviglio Pavese) was a project that had to overcome considerable difficulties and saw the involvement of almost every mathematician working on the subject at the time.
The lack of certain data a priori forced scientists to carry out experiments during the construction phase, in order to obtain data a posteriori and be able to judge between the different positions of scientists, who thus found in the Naviglio Pavese a sort of 'test bench'. Among these theories, the main ones were those developed by Antonio Tadini and Ottaviano Fabrizio Mossotti.
In this talk we will introduce a brief summary of the chronology of the construction work on the Naviglio Pavese, and then we will go over the controversies between Tadini and various Italian scientists, to show the main problems that rational Italian hydraulics had to solve at the beginning of the 19th century, analysing Tadini's replies in his last posthumous work, showing how the experimental data of the Naviglio Pavese played a major role in the analysis of the various theories proposed at the time.
Bibliography:
Tadini, A. (1816). Del movimento e della misura delle acque correnti. Sonsogno, Milano.
Bruschetti. G. (1821) Istoria dei progetti e delle opere per la navigazione interna del Milanese, Milano, Bernardoni.
Tadini, A. (1830). Di varie cose alla idraulica scienza appartenenti. Mazzoleni, Bergamo.
Fiocca, A. (1998). The Southern Deviation of Freely Falling Bodies: from Robert Hooke's Hypothesis to Edwin H. Hall's Experiment (1679-1902). «Physis», 35(1):51–83.
Fiocca, A. (2003). L'ispettore generale Antonio Tadini tra idrodinamica e idraulica sperimentale. «Rivista Napoleonica», 7-8:177–210.

Simon Gentil
Articulation entre courbes et généralité à l'âge classique

Abstract:
Dans cette communication je souhaite revenir sur le développement de l'idée de courbe à l'âge classique et son rapport à la généralité. Je montrerai d'abord que la notion de courbe telle qu'elle est considérée aujourd'hui ne peut pas avoir émergée avec les travaux des anciens. Je reviendrai ensuite rapidement sur les travaux de Descartes et notamment les questions relatives aux courbes qui se posent avec la publication de sa Géométrie en 1637. Je dresserai ensuite un panorama des réponses apportées par ses contemporains et successeurs afin d'illustrer la diversité des recherches concernant les courbes. La dernière partie sera consacrée à l'article courbe dans l'Encyclopédie de d'Alembert (1754) au récit qu'il propose des recherches liées aux courbes et aux difficultés épistémologiques liées à cette notion et à sa définition.

Murtaza Chopra

Sabine Rommevaux
Les sources de l'historien pour appréhender l'enseignement de la géométrie à l'université de Paris au Moyen Age.

Abstract:
Si, à la Renaissance, les traités spécifiquement consacrés à la pédagogie ou les préfaces aux manuels dans lesquels les auteurs présentent leur conception de l'enseignement de leur discipline nous permettent d'avoir une vision précise du mode d'enseignement des mathématiques, tel n'est pas le cas pour le Moyen Age, où de tels textes sont inexistants. Nous verrons donc quelles sources l'historien a à sa disposition pour se faire une idée de l'enseignement des mathématiques. Nous prendrons l'exemple de la géométrie, à l'université de Paris aux 13e et 14e siècles.

Hala Khasiba
Publier en informatique dans les années 1960-1970. Une étude du régime de publication de Claude Pair (1934-), fondateur du premier laboratoire d'informatique à l'Université de Nancy

Abstract:
This communication is part of an ongoing PhD thesis on the history of university computing in Nancy (1950-1980). It aims to explore the circulation of computing knowledge until its institutionalization, through the analysis of the scientific publications of Claude Pair (1934 - Claude Pair was born in Blâmont (Vosges) in Meurthe-et-Moselle. Educated at the École Normale Supérieure, he became an agrégé in mathematics in 1956 and pursued a career that led him from mathematics to computer science and eventually to high-level public administration. He began his career teaching at high schools in Metz and Nancy from 1956 to
1963. During his military service at the Commissariat à l'Énergie Atomique (1958-1959), he became familiar with machine-language programming on a Bull Gamma computer. Upon returning to his teaching position in Nancy, he contacted Jean Legras, an associate professor

of general mathematics at the Faculty of Science in Nancy, to train on the new calculating machines that Legras was using innovatively. As early as 1955, Jean Legras had begun testing an IBM 604 accounting machine at IBM-Nancy. Later, he created the applied mathematics service at the Faculty of Science and, in 1959, founded the university center for automatic computing, of which he became the director.).
Pair obtained a position as an associate researcher at the CNRS in 1963-1964, and in 1965, he defended his state thesis entitled Étude de la notion de pile, application à l'analyse syntaxique. He formed a working group on compilers with a small team of young researchers. In parallel with his research duties, he directed the computer science department at the Institut Universitaire de Technologie in Nancy. He later became president of the Institut National Polytechnique de Lorraine (1976-1981), one of Nancy's three universities, which brought together the local engineering schools. In 1981, he left Nancy, giving up his local responsibilities to become the Director of Secondary Schools at the Ministry of National Education. He later spent the end of his career in high public administration and in university bodies involved in the development of computerization in education and research.
Nationally recognized as one of the key figures in the emergence of computer science research in France, Claude Pair published approximately ninety varied works between 1963 and 1980, including journal articles, conference proceedings, books, bulletins, and technical reports. Internationally, computer scientists published their work in books, academic journals, and specialized scientific publications such as the Journal of the Association for Computing Machinery (JACM, 1954), the Institute of Electrical and Electronics Engineers (IEEE Annals of the History of Computing, 1951), or the International Federation for Information Processing (IFIP), among others. However, although French computer scientists also published in these international journals, their scientific contribution to computer science could be considered relatively modest compared to other countries like the United States. Nevertheless, they published in national and local journals. The main publications included the Annales des Télécommunications (1946), the proceedings of conferences organized by the Association Française pour la Cybernétique Économique et Technique (AFCET, 1967), as well as technical reports produced by the Institut de Recherche en Informatique et Automatique (IRIA, now INRIA, 1967), the CNRS, and others.
The Henri Poincaré Archives in Nancy hold an extensive "Claude Pair" collection. For this communication, I will explore its bibliographic dimension and seek, through the study of Claude Pair's publishing regime, to contribute to the understanding of the emergence of a new science at a provincial university. I will also offer comparative elements with his mentor, Jean Legras, and the young researchers who worked under Pair's direction.

Damian Moosbrugger
A Technician's Mathematics: The Case of Jost Bürgi

Abstract:
Early modern Europe saw the emergence of a figure I refer to as the technician-mathematician. By this term, I wish to denote people that were involved in mathematical pursuits while at the same time being engaged in technical practices. In my research I focus on the mathematical works of the German-speaking part of this tradition, which has – probably thanks to the earlier invention of the printing press – left a considerable amount of source material in the form of books on mathematics written in the vernacular. An almost paradigmatic member of this community was the Swiss clock- and instrument-maker Jost Bürgi (1552-1632), who was employed at the courts in Kassel and Prague. Technical

practitioners like Bürgi gained practical knowledge through the experience of constructing artifacts, interacting with tools, and performing measurements and calculations. Based on the conception of mathematics as contingent human practice, I argue that the adaptation of their technical experience to mathematical tasks can be expected to have significantly shaped the discourse of mathematics among technician-mathematicians, resulting in the emergence of a specific mathematical and computational culture out of technological craftwork. This is what I want to refer to as a technician's mathematics. The assumption of its existence in Europe around 1600 forms the main hypothesis of my ongoing research. I already managed to identify several interrelations between mathematical and technical practice for the case of Bürgi. More specifically, it can be shown that there are a number of original instances in his mathematical works – concerned with trigonometry, especially sine-computation, algebra and a logarithmic tool – that express a resemblance to the technical apparatus he engaged with. Thus, I argue that his practical engagement with technology not only motivated but internally shaped his mathematics.