

PTOLEMAEUS ARABUS ET LATINUS (PAL)

Project description

1. This project is dedicated to the edition and study of the Arabic and Latin versions of Ptolemy's astronomical and astrological texts and related material. This '*Corpus Ptolemaicum*' includes three categories of texts (see also Synoptic Table in Appendix 1):
 - A. Ptolemy's authentic works, comprising the *Almagest*, the *Tetrabiblos* and the minor works *Analemma*, *Phases of the Fixed Stars*, *Planetary Hypotheses* and *Planisphaerium*.
 - B. *Pseudepigrapha* (works falsely attributed to Ptolemy), i.e. mainly the *Centiloquium*, but also other astronomical and astrological works, about 30 of which are known in Arabic and Latin.
 - C. Commentaries on the texts under A and B above.
2. *General aim* – The aim of the project is to provide a full treatment of the *Corpus Ptolemaicum*, including a catalogue of manuscripts (§3 below), editions of the texts (§§4-6), and various tools and studies towards a better understanding of Ptolemy's reception in the Arabic/Islamic world and Latin/Christian Europe up to 1700 A.D. (§§7-8).
3. *Catalogue of manuscripts* – The catalogue of manuscripts will describe all surviving Arabic and Latin manuscripts (and early printed editions) of the *Corpus Ptolemaicum*, categories A, B and C. It is anticipated that this catalogue will include at least 100 Arabic and 500 Latin manuscripts.
4. *Editions (Authentic works and pseudepigrapha, A-B)* – The edition of the *Corpus Ptolemaicum* (categories A and B) will take place in three steps, as follows:
 1. *Digital reproductions*: each text (and each version in cases of multiple translations) will receive an online digital reproduction in scanned form from one or more selected manuscripts, so as to make the primary material available to scholars at an early stage of the project. The digital reproductions will be accompanied by reading aids, such as a table of contents listing all chapters and diagrams, with links to the relevant pages of the manuscript.
 2. *Online transcriptions*: the digital reproductions will be gradually linked with online standardised transcriptions, so as to make each text searchable. State of the art technology will be used, so that, for example, parallel passages in the various translations of the same text can be easily compared. Technical terms will be linked to the glossary (§7.1 below), so that definitions as well as occurrences in other texts can be found immediately.
 3. *Critical editions*: the online transcriptions will be gradually supplemented by proper critical editions based on examination of all extant manuscripts. All works of the *Corpus Ptolemaicum* under A (authentic works) and B (*pseudepigrapha*) will receive a critical edition. In cases of multiple translations, only the most influential Arabic and Latin versions will be edited, but detailed comparisons with all other versions will be made, and sections which significantly diverge from the base version will be separately edited. The critical edition will be published in the PAL book series and the plain text (i.e., without introduction and critical apparatus) will be published online.
5. *Editions (Commentaries, C)* – Texts of category C (commentaries, including glosses found in the manuscripts) will be the subject of a critical survey and the most important of them will be edited following the three-step procedure described above. As far as possible, digital reproductions and online transcriptions (§4.1-2) will be provided for all texts, but only the most significant of them will be critically edited (§4.3). 'Significant' refers to influential texts which played an important role in conveying Ptolemy's ideas and especially those texts which expand on, correct, question or criticise Ptolemy's original texts (as opposed to mere paraphrases and commentaries for educational purposes). It is anticipated that a dozen substantial texts or groups of shorter texts will receive a critical edition. These will definitely include Jābir ibn Aflāḥ's *Iṣlāḥ al-Majisṭī* and its Latin translation by Gerard of Cremona (see Synoptic Table, C1.2.1-2); the anonymous *Almagestum parvum* (C1.24); and both the Arabic and Latin versions of 'Alī ibn Riḍwān's commentary on the *Tetrabiblos* (C2.1.1-2) and of Abū Ja'far's commentary on the *Centiloquium* (C3.1.1-2). Besides the commentaries proper, there are numerous Arabic and Latin works which relate to Ptolemy less directly, such as basic expositions of Ptolemaic astronomy (e.g. al-

Farghānī and the *Theorice planetarum*), attempts to provide a physical basis for Ptolemy's planetary models (e.g. Ibn al-Haytham), or works seeking to bring these models in accordance with Aristotle's physical principles (e.g. al-Bīṭrūjī). While these works are not commentaries on Ptolemy in the strict sense – and hence are not included in the treatment described above, they will nevertheless be examined and decisions may be made to edit those unstudied works which are particularly relevant to the project, again following the three-step procedure described above.

6. *Astronomical tables, almanacs and horoscopes* – Special attention will be given to astronomical tables, almanacs (or ephemerides) and horoscopes, insofar as they represent the main products of medieval and early modern astronomical and astrological activity in the Ptolemaic tradition. The aim here will be to design and maintain a database of these sources, to produce a critical survey of them and to edit some of the most representative and/or influential ones.
7. *Tools*
 1. *Greek-Arabic-Latin glossary* – An online Greek-Arabic-Latin glossary of astronomical and astrological terms with technical/historical commentary, designed as a constantly growing online tool based on the texts already edited in the project.
 2. *Computer programmes for editing and analysing astronomical tables, almanacs and horoscopes* – These programmes will provide convenient means for entering numerical data from a variety of sources and producing critical apparatuses for them. Furthermore, they will offer a range of possibilities for analysing the mathematical properties of, and the relationships between, various types of astronomical data.
8. *Studies* – The project will inevitably give rise to new questions, the most important of which will be the subject of international conferences and workshops (§10.1 below), and will lead to independent publications. Special attention will be paid to the following three research areas, for which the relevant documents will be assembled throughout the project:
 1. The reception of Ptolemy in the Arabic world and Western Europe up to 1700 A.D.
 2. A comparative study of Arabic and Latin astronomy and astrology in their historical context.
 3. The place of Ptolemy in the Copernican Revolution.
9. *Output* – The project is divided into 38 modules (research units), which can largely be carried out independently from each other and most of which will result in a major in-print publication and/or its online equivalent. The completion of most modules will require the full-time work of one scholar over a period of 3 to 5 years, with the exception of the critical editions of the Arabic *Almagest*, the Latin *Almagest* and the Latin *pseudepigrapha*, which are expected to take up to 10 years each. Details of the modules are given in Appendix 2.
10. *International cooperation*
 1. Organisation of 8 international conferences and workshops.
 2. Partnership with the Warburg Institute (University of London) and its new Centre for the History of Arabic Studies in Europe (CHASE). This partnership will take the form of an exchange programme of PhD students and post-doctoral researchers, joint supervision of doctoral students, and joint organisation of workshops and conferences, some of which will take place at the Warburg Institute. See <http://warburg.sas.ac.uk/research/projects/ptolemy/>.
 3. Visiting fellowships. Over the course of the project, 12 visiting scholars will be invited to work with the research team in Munich for an average period of 4 months. Among these there will also be specialists of Greek, Syriac, Hebrew and Persian scientific texts.
11. The project is funded by the Union der deutschen Akademien der Wissenschaften and hosted by the Bayerische Akademie der Wissenschaften in Munich for a period of 25 years starting in 2013. The project is supervised by Prof. Dr. Dag Nikolaus Hasse (University of Würzburg) and carried out by five scholars as follows: two research leaders, Dr David Juste (formerly University of Sydney) and Dr Benno van Dalen (formerly University of Munich); two post-doctoral researchers; and one doctoral student. The staff of the project also includes a computer scientist, a secretary and two student assistants.

For further information, please contact David Juste, Benno van Dalen or Dag Nikolaus Hasse at info@ptolemaeus.badw.de.

Appendix 1: The *Corpus Ptolemaicum* – Synoptic Table

Note: This table reflects the state of the art and is by no means complete. Texts marked with an asterisk (*) have received a modern edition.

A. Authentic works

1. *Almagest* – Arabic (*al-Majīstī*)
 1. al-Ḥajjāj ibn Yūsuf ibn Maṭar (827-828)
 2. Ishāq ibn Ḥunayn (c. 880, revised by Thābit ibn Qurra before 901)
2. *Almagest* – Latin (*Almagesti*)
 1. Hermann in Palermo (c. 1160, from Greek)
 2. Gerard of Cremona (before 1175, from Arabic)
 3. ‘Abd al-Masīḥ of Winchester (12th c., from Arabic)
 4. George of Trebizond (1451, from Greek)
3. *Tetrabiblos* – Arabic (*Kitāb al-Arba‘a*)
 1. ‘Umar ibn al-Farrukhān al-Ṭabarī (from Persian)
 2. Hunayn ibn Ishāq (with additions by Thābit ibn Qurra) [ed. in preparation Burnett/Yamamoto]
4. *Tetrabiblos* – Latin (*Quadripartitum*)
 1. Plato of Tivoli (1138, from Arabic) [ed. in preparation Burnett/Yamamoto]
 2. Anonymous of 1206 (from Arabic)
 3. Anonymous in Toledo, 1234
 4. Anonymous before 1250
 5. Aegidius de Tebaldis (1271-1275, from Arabic, with ‘Alī ibn Riḍwān’s commentary)
 6. William of Moerbeke (before 1281, from Greek)
 7. Joachim Camerarius (1535, from Greek)
 8. Antonio Gogava (1548, from Greek)
 9. Philipp Melanchthon (1553, from Greek)
5. **Planetary Hypotheses* - Arabic [ed. facsimile Goldstein 1967; ed. Morelon 1993]
6. *Phases of the Fixed Stars* – Latin (*Inerrantium stellarum significationes*)
7. **Analemma* – Latin [ed. Heiberg 1907; ed. Edwards 1984]
8. *Planisphaerium*
 1. *Arabic [ed. Sidoli/Berggren 2007]
 2. *Latin [ed. Heiberg 1907]

B. Pseudepigrapha

1. *Centiloquium* – Arabic (*Kitāb al-Thamara*) [ed. in preparation Lemay/Boudet]
2. *Centiloquium* – Latin
 1. Adelard of Bath (c. 1120) [ed. in preparation Lemay/Boudet]
 2. John of Seville [ed. in preparation Lemay/Boudet]
 3. Plato of Tivoli (1136) [ed. in preparation Lemay/Boudet]
 4. Hermann of Carinthia (c. 1140) [ed. in preparation Lemay/Boudet]
 5. Hugo of Santalla (before 1151) [ed. in preparation Lemay/Boudet]
 6. George of Trebizond (mid-15th c.)
 7. Giovanni Pontano (1477)
3. *Dāt al-kursī*
4. *Kitāb al-Malḥama*
5. *Ṣifat malḥama yarwihā... Baṭlamiyūs ‘an Dāniyāl*
6. *Kitāb Mawālid al-rijāl ‘alā ra’y Harmis wa-Baṭlamiyūs*
7. *Kitāb Mawālid al-nisā’ ‘alā ra’y Harmis wa-Baṭlamiyūs*
8. *Mawlid al-sana*
9. *Kitāb al-Majālis*
10. *al-Kanz al-a‘ẓam wa-l-sirr al-akbar*
11. *al-As‘ila wa-l-ajwiba*
12. *Archanum magni Dei de reductione geomancie*
13. *De cognitionibus morborum*
14. *De cometis*
15. *De criticis diebus*
16. *De eclipsibus*
17. *De his que in celo aspiciuntur libellus*
18. **De imaginibus super facies signorum* [ed. Boudet 2008]
19. *De iudiciis*
20. *De iudiciis partium*
21. **De temporum mutatione* [ed. Burnett 2006]
22. *Dixerunt Ptholomeus et Hermes quod locus Lune in hora...*
23. *Figure septem planetarum*
24. *In arte stellifica*
25. *Introductorius iudiciorum apotelesmaticon*

26. *Iudicia*
27. *Liber de nativitatibus hominum*
28. *Liber figure*
29. *Liber projectionis radiorum stellarum*
30. *Nomina et virtutes herbarum secretarum septem planetarum*
31. *Utrum nativitas fuit masculine*

C1. Commentaries – *Almagest*

1. Thābit ibn Qurra
 1. **Tashīl al-Majisṭī* [ed. Morelon 1987]
 2. **De hiis que indigent expositione antequam legatur Almagesti* [ed. Carmody 1960]
2. Jābir ibn Aflāḥ
 1. **Iṣlāḥ al-Majisṭī* [ed. Bellver, unpublished]
 2. *Liber super Almagesti*
3. al-Kindī, *Kitāb fi 'l-ṣinā' a al-'uzmā*
4. *Thābit ibn Qurra, *Risāla fī Ḥarakat al-nayyirayn* [ed. Morelon 1987]
5. Abū Ja'far al-Khāzin, *Tafsīr al-Majisṭī*
6. Abū Naṣr Muḥammad ibn Muḥammad al-Fārābī, *Sharḥ al-Majisṭī*
7. Ibn al-Haytham, *Sharḥ al-Majisṭī*
8. Ibn al-Haytham, *Ḥall shukūk fī kitāb al-Majisṭī*
9. *Ibn al-Haytham, *Maqāla fī 'l-shukūk 'alā Baṭlamiyūs* [ed. Sabra 1971]
10. Ibn al-Haytham, *al-Masā'il (wa-l-ajwiba)*
11. Anonymous (MS Ahmet III 3329)
12. al-Nasawī, < *On the Transversal Theorem* >
13. Ibn Sīnā, *Tahrīr al-Majisṭī*
14. Ibn Sīnā, < chapters in *Kitāb al-Shifā'* and *Kitāb al-Najāt* >
15. Anonymous, *Tahrīr al-Majisṭī*
16. Abū 'Abd Allāh Muḥammad al-Khāzimī, *Mukhtaṣar al-Majisṭī*
17. *Abu 'l-Futūḥ Aḥmad ibn Muḥammad ibn al-Sarī, *al-khaṭa'* [ed. Kunitzsch 1975]
18. Abu 'l-Futūḥ Aḥmad ibn Muḥammad ibn al-Sarī, *Mā dhakarahu Baṭlamiyūs fī 'l-bāb al-thānī*
19. Anonymous, *Multaqaṭāt min Kitāb al-Majisṭī*
20. Ibn Rushd, *Mukhtaṣar al-Majisṭī* (extant in Hebrew)
21. Naṣīr al-Dīn al-Ṭūsī, *Tahrīr al-Majisṭī*
22. Athīr al-Dīn al-Mufaḍḍal al-Abharī, < Introduction to the *Almagest* >
23. Muḥyi 'l-Dīn al-Maghribī, *Talkhīṣ al-Majisṭī*
24. Anonymous, *Almagestum parvum* (13th c.)
25. Simon Bredon (d. 1372)
26. Anonymous (MS Erfurt, UFB, Amplon. F. 375, s. XIV)
27. George of Trebizond (1451, with supercommentary by Regiomontanus)
28. Peurbach/Regiomontanus, *Epitome Almagesti* (c. 1462)

C2. Commentaries – *Tetrabiblos*

1. 'Alī ibn Riḍwān (lemmatic commentary, together with the original text)
 1. Arabic (before 1061)
 2. Latin (Aegidius de Tebaldis, 1271-1275)
2. Muḥammad ibn Jābir al-Battānī, *Kitāb al-Arba' al-maqalāt*
3. *Kūshyār ibn Labbān, *al-Mudkhal fī ṣinā'at aḥkām al-nujūm* [ed. Yano 1997]
4. Alvaro de Oviedo (?)
5. Simon Bredon (d. 1372)
6. Franciscus Sirigattus
7. Conrad Heingarter
8. Girolamo Cardano (1554)
9. Valentin Nabod
10. Conrad Dasypodius (1578)
11. Anonymous commentaries:
 1. Paris, BNF, nouv. acq. lat. 693 (s. XIV)
 2. Paris, BNF, lat. 7302 (s. XV)
 3. Munich, BSB, Clm 27002 (s. XVI)
 4. Vatican, BAV, Pal. lat. 1366 (s. XVI)
 5. Florence, BNC, Panciatichiano 309 (s. XVII)

C3. Commentaries – *Centiloquium*

1. Abū Ja'far Aḥmad ibn Yūsuf ibn al-Dāya (lemmatic commentary, together with original text)
 1. *Tafsīr Kitāb al-Thamara li-Baṭlamiyūs* (c. 922) [ed. in preparation Lemay/Boudet]
 2. Latin (together with translations B.2.2-5 above) [ed. in preparation Lemay/Boudet]
2. Abu 'l-'Abbās Aḥmad ibn 'Alī al-Iṣbahānī al-Kātib (fragments)
3. Naṣīr al-Dīn al-Ṭūsī (in Persian)

4. ʿAbd al-Qādir ibn Ibrāhīm al-Maḥallī al-Shāfiʿī
5. William of Aragon
6. Conrad Heingarter
7. Laurentius Bonincontrius
8. George of Trebizond
9. Giovanni Pontano
10. Anonymous (Vienna, ÖNB, 3161, s. XV)

C4. Commentaries – Other texts

1. Maslama al-Majrīṭī on the *Planisphaerium*
 1. *Arabic [ed. Kunitzsch/Lorch 1994]
 2. *Latin (Hermann of Carinthia, 1143) [ed. Kunitzsch/Lorch 1994]
2. Anonymous (13th c.) on *Iudicia* (B.26 above)
3. Conrad Heingarter on *De cometis* (B.14. above)

Appendix 2: Output

Online only

- 1 Digital reproductions of the *Corpus Ptolemaicum*
- 2 Online transcriptions of the *Corpus Ptolemaicum*
- 3 Greek-Arabic-Latin Glossary
- 4 Database and computer programmes for astronomical tables, almanacs and horoscopes.

In print and/or online

I. Catalogues, tools, studies

- 5 Catalogue of Arabic manuscripts
- 6 Catalogue of Latin manuscripts
- 7 Survey of commentaries and glosses (Arabic and Latin)
- 8 Survey of Arabic astronomical tables, almanacs and horoscopes
- 9 Survey of Latin astronomical tables, almanacs and horoscopes
- 10 Study 1: The reception of Ptolemy in the Arabic world and Western Europe up to 1700 A.D.
- 11 Study 2: A comparative study of Arabic and Latin astronomy and astrology in historical context
- 12 Study 3: The place of Ptolemy in the Copernican Revolution
- 13-15 Proceedings of three international conferences

II. Critical editions

A. Authentic works

- 16 *Almagest* – Arabic (al-Ḥajjāj)
- 17 *Almagest* – Arabic (Ishāq ibn Ḥunayn)
- 18 *Almagest* – Latin (Gerard of Cremona)
- 19 *Tetrabiblos* – Arabic (Ḥunayn ibn Ishāq) [Burnett/Yamamoto]
- 20 *Tetrabiblos* – Latin (Plato of Tivoli) [Burnett/Yamamoto]
- 21 *Tetrabiblos* – Latin (Aegidius de Tebaldis)
- 22 Minor works – Arabic (*Planetary Hypotheses*, *Planisphaerium*)
- 23 Minor works – Latin (*Analemma*, *Phases of the Fixed Stars*, *Planisphaerium*)

B. Pseudepigrapha

- 24 *Kitāb al-Thamara / Centiloquium* – Arabic and Latin (with comm. Abū Jaʿfar) [Lemay/Boudet]
- 25 Others – Arabic
- 26 Others – Latin

C. Commentaries

- 27 Arabic and Latin glosses
- 28 Jābir ibn Aflāḥ, *Iṣlāḥ al-Majisṭī*
- 29 Geber [Jābir ibn Aflāḥ], *Liber super Almagesti*
- 30 *Almagestum parvum*
- 31 ʿAlī ibn Riḍwān on the *Tetrabiblos* – Arabic
- 32 ʿAlī ibn Riḍwān on the *Tetrabiblos* – Latin
- 33 Abū Jaʿfar Aḥmad ibn Yūsuf ibn al-Dāya on the *Centiloquium* – Arabic [Lemay/Boudet]
- 34 Abū Jaʿfar Aḥmad ibn Yūsuf ibn al-Dāya on the *Centiloquium* – Latin [Lemay/Boudet]
- 35-38 Four further commentaries or related texts to be selected in the course of the project