



Memorandum of Understanding for Scientific Cooperation

Between the Shanghai Astronomical Observatory and the

Universidad Nacional de Córdoba

This Memorandum Of Understanding (MOU) establishes a framework for scientific collaboration between the SHanghai Astronomical Observatory of the Chinese Academy of Sciences (SHAO) represented by its Director, Dr. Kong Da-Li, with address in No.80 Nandan Road, Shanghai, China, and the Universidad Nacional de Córdoba (UNC) represented by its Rector, Prof. Mgter. John Darío Boretto, exercising the powers granted by Article 22 of the University Statute, with address in Av. Haya de la Torre s/n, Pabellón Argentina, 2° piso, Ciudad Universitaria, Córdoba, Argentina. The MOU aims to advance the digitization of historical photographic plates, preserving critical astronomical heritage while enabling scientific research.

Purpose and Scope

This agreement aims to establish cooperative efforts between SHAO and UNC to digitize the collection of historical photographic plates in the Astronomical Observatory of the UNC (OA-UNC), furthering both institutions' scientific and cultural objectives. These efforts will support global research initiatives in time-domain astronomy and preserve irreplaceable scientific data.

Background

Photographic plates, a staple in astronomical observations from the 1850s, hold valuable data that spans nearly 150 years, capturing unique snapshots of the night sky. These plates are essential records for understanding long-term cosmic changes and time-domain astronomy. SHAO has developed five precise multi-function digitizing machines since 2012, with an initial implementation that processed approximately 30,000 Chinese plates stored in the Chinese Virtual Observatory (CVO) for open-access research. During 2020-2023, about 20,000 historical plates from Torino Astrophysical Observatory and Ulugh Beg Astronomical Institute had been digitized in SHAO and sent back to Italy and Uzbekistan safely. OA-UNC's collection, consisting of approximately 9,300 plates captured between 1907 and 1975, represents a valuable



astronomical resource. To prevent data degradation over time, SHAO and UNC agree on a collaborative effort to digitize these plates with high-precision technology.

Terms of Cooperation

1. **Funding Applications:** Both parties will jointly seek financial support from relevant institutions and grant organizations to ensure the project's continuity and completion.
2. **Cataloging and Storage:** UNC will compile and prepare a comprehensive catalog of its plates. SHAO will allocate a secure, climate-controlled space for storing UNC's plates during the digitization process.
3. **Transportation of Plates:** SHAO will provide special containers to ensure the safe transportation of the plates. UNC, with technical guidance from SHAO, will pack the plates securely to prevent any damage during transit.
4. **Intellectual Property Rights:** UNC retains exclusive intellectual property rights over the original astronomical plates and their digitized high-resolution images. As a collaborative partner, SHAO is granted perpetual rights to use the digitized images, strictly limited to scientific research purposes (including but not limited to academic publications, research reports, etc.).
5. **Data Storage and Access:** The digitized images and processed data will be stored in their respective virtual observatory databases. SHAO will impose access restrictions on its database, allowing use only by researchers from China and Argentina for a period of two years, after which it will be opened to researchers worldwide. Any usage beyond the scope of scientific research must be communicated in writing to UNC and obtain its approval prior to implementation. The two parties will collaborate to develop image analysis software to support joint research programs based on the digitized data. All scientific results derived from these data shall include the following acknowledgment: This work has made use of the data of digitized plates under the cooperation between Astronomical Observatory of the Universidad Nacional de Córdoba and Shanghai Astronomical Observatory of the Chinese Academy of Sciences.
6. **Return of Plates:** Upon completion of the digitization process, all photographic plates will be returned to UNC. SHAO will ensure that the plates





are carefully preserved during the digitization process and returned in their original condition.

7. **Training and Capacity Building:** Both institutions commit to a collaborative training program for master's and PhD students, fostering skills in data analysis, digitization, and scientific software development.
8. **Dispute Resolution:** In the event of a conflict regarding the interpretation and/or application of the provisions of this agreement, as well as all resulting obligations, the Parties shall first attempt to resolve it through good-faith consultations within 60 days of written notification. If unresolved, the parties agree to submit to an arbitration tribunal composed of one member from each party and another designated by mutual agreement. Only if arbitration fails shall the dispute be submitted to the Federal Courts of Córdoba, Argentina or the Beijing No.1 Intermediate People's Court, China, chosen by the Party not initiating the action. Both Parties waive any other forum or jurisdiction.



Duration and Amendments

This agreement is valid from June 1, 2025, to December 31, 2028, with the possibility of extension or revision through mutual consent.

As proof of compliance with the foregoing, both parties sign this Agreement in Spanish and English, in duplicate on all pages, in the place and on the date of the signatures of the parties. In the event of a discrepancy, the English version shall prevail over the Spanish version.

*Shanghai Astronomical Observatory,
Chinese Academy of Sciences*



**Dr. Kong Da-Li
Director, SHAO**

Date: 2025.8.29

(stamp)

Universidad Nacional de Córdoba

**Mgtr. John D. Boretto
Rector, UNC**

Date:

(stamp)





Universidad Nacional de Córdoba
2025

**Hoja Adicional de Firmas
Informe Gráfico**

Número:

Referencia: OAC-UNC&HAO-MOU-english

El documento fue importado por el sistema GEDO con un total de 3 pagina/s.