

Preface

IAU Symposium 200 on “The Formation of Binary Stars” took place from 10-15 April 2000 in Potsdam, Germany. The Astrophysical Institute Potsdam (AIP) hosted the conference at its Telegraphenberg site, the location of the former Astrophysical Observatory Potsdam. Potsdam and its Observatory have a long tradition in binary star research. Hermann Carl Vogel measured some of the first radial velocities of bright stars at the turn of the century, and in doing so (with Edward Pickering of Harvard) discovered the first spectroscopic binaries. This line of research also led to the discovery of the stationary calcium H and K lines in the spectrum of the delta Orionis spectroscopic binary by Johannes Hartmann in 1904, using the Potsdam 50/80 cm double refractor that had been installed in 1899 by Wilhelm II, the last German Emperor. The opening reception of the conference took place in the same refractor dome, the instrument still in place. The discovery of these stationary calcium lines marks the birth of study of the interstellar medium. Thus Potsdam provided an appropriate site for the first IAU Symposium connecting binary stars and their origin in interstellar clouds.

The planning of the conference started over dinner at the Protostars and Planets IV conference in Santa Barbara, California in the summer of 1998. With the advent of high-resolution infrared techniques in the late-1980's, it had become evident that most pre-main-sequence (PMS) stars are binaries. After a decade of rapid developments, the timing was perfect for the field to take stock of its recent triumphs and future prospects. And so the movement toward IAU Symposium 200 on young binary stars began.

The observations have demanded that we recognize that binary star formation is the primary branch of the star formation process. While our presence in orbit around the Sun will always drive interest in the origin of single stars, a general understanding of star formation must focus on multiple star formation, and theorists have rallied to the challenge. Similarly, the typical environment for planet formation may be a binary star. Indeed, much recent work has explored the impact of companions on protostellar disks, revealing dynamically cleared regions, accretion streams, and orbital evolution. All of these must profoundly impact on planetary formation. Lastly, the high frequency of PMS binaries implies equally rich populations of protobinaries. This observational frontier is just now being breached.

The challenge to the Scientific Organizing Committee was to develop a program that coherently linked a wide range of observational studies, including binary populations, circumbinary environments, jets and outflows, stellar masses, and protobinaries; diverse theoretical directions in cloud fragmentation, disk evolution, pre-main-sequence stellar evolution and (for fun!) planet formation; and a rich array of instrumentation on the horizon directed toward high-resolution observations from the optical to the millimeter. The SOC consisted of H. Zinnecker (co-chair), R.D. Mathieu (co-chair), P. Artymowicz (Sweden), A. Boss (USA), J. Bouvier (France), C. Clarke (United Kingdom), A. Dutrey (France), A. Ghez (USA), P. Kroupa (Germany), C. Leinert (Germany), S.

Miyama (Japan), B. Reipurth (USA), M. Simon (USA), A. Tokovinin (Chile), and A. Whitworth (United Kingdom). The co-chairmen would like to thank the members of the SOC for their important contributions in shaping the Symposium, and for their patience with some of the more innovative elements of the meeting, such as the talks on those “featured objects” which have highlighted the last decade of observations.

On behalf of the SOC, we would also like to thank the Local Organizing Committee (LOC), in particular Rainer Köhler and Mark McCaughrean for their assistance in dealing with the participants’ problems prior to the meeting, including email enquiries, poster papers, name tags, arrival guidelines, and tourist information. Bernhard Kliem and Elena Schilbach also helped a lot in the detailed planning of the meeting. Furthermore, we greatly appreciate the efforts of Peter Friedrich and Klaus Fritze and their team who helped to run the conference so smoothly. We thank all the students who shepherded the microphones around in the lecture hall. Very special thanks are extended to Uli von Kusserow who went to great pains to videotape the whole conference. This is the first IAU Symposium available on videotape (44 hr of talks, including all the unpublished discussions). Copies of the individual talks are available through Hans Zinnecker at the AIP. The same holds for the many photographs shown throughout this volume.

Our task has been to edit the collection of superb papers generated from the Symposium. We were inspired by Bo Reipurth, who with Hans Zinnecker produced the poster proceedings book (with 78 contributions) *before* the symposium, in time to be handed out to the participants upon arrival. With regard to the proceedings book that you hold in your hands now, our sincere thanks go to Petra Böhm and Cornelia Biering for their enormous help in preparing the final camera-ready manuscripts. Without them, our editorial task would have been insurmountable.

We would like to acknowledge several sponsors without whom the symposium would not have been possible, including the Wüstenrot Foundation, the DFG (German Science Foundation), and the MWFK (Brandenburg Ministry for Research and Culture). We also thank the AIP and its director, Günther Hasinger, for logistic and moral support. We want to recognize the IAU for their financial support which enabled the attendance of many young astronomers and several invited speakers that could otherwise not have attended. We owe special thanks to the historic Ufa/DEFA Babelsberg film studios for a very unique conference dinner, and to Mark McCaughrean for a fitting after dinner speech from the throne.

Our deep thanks go to the participants for their contributions to this exciting field and to the conference, with special recognition for the invited speakers and poster authors who created truly excellent manuscripts in a timely way. Their work will be an inspiration to those who follow in the study of binary formation. Finally, in this spirit of connecting past and future, we were honored to hear talks from two distinguished guests, Prof. R. Ebert and Prof. R. Lüst, both of whom made vital contributions to the field of star and disk formation before most of the participants were born.

The symposium was attended by 165 people from 25 countries. Perhaps the greatest significance of IAU Symposium 200 was to bring together citizens of so many countries in the place where the world was divided by the Potsdam Treaty in 1945. We symbolize this in the conference poster given to the participants as a farewell gift. The painting by Ian McCaughrean shows two buildings, Sternwarte Babelsberg in Potsdam (now a part of the AIP) and the new Reichstag in Berlin (now the seat of the German parliament), which look rather similar and are here united by the legendary Potsdam Glienicke Bridge (“the Bridge of Unity”).

We reprint this poster in black and white on the last page. For those of you who attended the symposium we hope the poster will serve as a long-lasting reminder of our joining together from all over the world in Potsdam 2000.

Hans Zinnecker
Robert D. Mathieu
co-chairmen IAU200

Potsdam and Madison, Dec 2000





The Einstein-Tower, on the former Potsdam Astrophysical Observatory grounds. This expressionistic architectural jewel, harbouring a solar telescope, was conceived by Erwin Finlay-Freundlich (with Einstein's support) and completed by architect Erich Mendelsohn in 1924. It was recently renovated with the help of the Wüstenrot Foundation, one of our sponsors. Its original purpose was to prove the redshift of spectral lines in the gravitational field of the Sun - an effect predict by Einstein's Theory of General Relativity. Thus the name Einstein-Tower. The two co-chairmen of the SOC can be seen sitting there as a binary pair in a photo taken the day after the conference.



Another pair of editors, Bo Reipurth and Hans Zinnecker, presenting the poster proceedings book of the conference in front of the lecture hall.