Professor Mirek J. Plavec

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Abstract. In keeping with its co-sponsorship by members of both the “close” and “wide” binary star communities, IAU Symposium 240 has been jointly dedicated to the honor of Czech astronomer Mirek J. Plavec and the memory of U.S. astronomer Charles E. Worley.

1. A few bibliographical facts

Miroslav Plavec was born on October 7, 1925 in Sedlčany, Czech Republic. During World War II, in 1942, his father died in a Nazi concentration camp. The next year, his mother moved with him and his brother Jaroslav to Ondřejov and Miroslav had the first chance to visit astronomical observatory and even to participate in some research there. From 1945 to 1949 he studied astronomy at the Charles University and graduated there in 1949. In 1950, he married his whole-life partner Zdenka.

In 1955, he obtained PhD in Astronomy and two years later he moved again to Ondřejov, this time with his own family. In 1958, the Stellar Department was founded in the Astronomical Institute of the Czechoslovak Academy of Sciences under the leadership of Dr. Luboš Perek. At that time, Miroslav switched from meteor studies to stellar astrophysics and became the deputy of Perek.

He visited Manchester at the invitation of Prof. Zdeněk Kopal and later the Dominion Astrophysical Observatory (DAO) to collaborate with Dr. Alan H. Batten in the late fifties and sixties. Since 1959, when the Czechoslovak government approved the purchase of the 2-m Zeiss Jena reflector to be installed in Ondřejov, he, Luboš Perek and other

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colleagues in the department were preparing the site for the construction of the dome and installation of the telescope.

In 1968 he obtained DSc. degree in astronomy at the Charles University of Prague and started to teach students there. In the years 1968 to 1970, he served as the Head of the Stellar Department after Perek was appointed the Director of the whole Institute.

In 1969, after the Soviet-led invasion to Czechoslovakia, he and his family moved to Canada and then to the USA; after shorter stays at the DAO, University of Pennsylvania and University of Ohio, he got a permanent position at the UCLA and served also as the Head of the Department of Astronomy there.
He has been living in Pacific Palisades, a suburb of Los Angeles since then. He also simplified his Christian name Miroslav, which was hard to pronounce correctly in English, to shorter and easier Mirek (which is a shorter version of Miroslav, very often used in spoken Czech).

In 1987, he for the first time after 1969 visited Czechoslovakia officially and had an invited review during the 10th European Regional Meeting of the IAU.

In October 2000, a very successful conference *Interacting astronomers: A symposium on Mirek Plavec’s favorite stars* was held at the UCLA to celebrate Mirek’s 75th birthday.

2. Reminiscences of several of Mirek’s students, colleagues and friends

2.1. Jiří Grygar

In the late fifties Mirek Plavec was a household word in Czechoslovakia because he was an enthusiastic popularizer of astronomy in the public radio, eloquent lecturer and author of many popular articles and books. His scientific profile was even more attractive. From 1949 to 1959 he finished alone 14 papers and two monographies on meteors. However, in 1959 (the year of my graduation from Charles U.) he switched his interest to stellar astronomy and published his first two papers on close binaries (W Del and RS CVn).

My own evolution followed a similar track: firstly meteors, then popularization but my dream was to study stars. Thus it was almost inevitable that I asked Mirek to join his tiny group of three (observer Z. Pěkný, computing assistant M. Smetanová) in Ondřejov. Soon he became the clandestine supervisor of my PhD Thesis; its theme (limb darkening in eclipsing binaries) was suggested to me by Z. Kopal during his private visit to Prague in 1960. I believe that Kopal bored a hole in Iron Curtain for Mirek and soon after Mirek published many papers on orbital changes of the eclipsing variables and their apsidal motion. However, Mirek was already deeply interested in the solution of the Algol paradox and together with his next students (S. Krůž, J. Horn, P. Kratochvíl/Harmanec) he found — independently of Polish and German groups — the solution: huge mass overflow over the Roche lobe. I was much surprised that this paradigm was never accepted by Kopal who subsequently detached himself from further so-productive applications of his own original concept of close binaries.

The early model calculations were done on the first available digital computer ZUSE located in the confiscated Prague monastery; thus the fine-tuning of the codes were done in the silent seclusion of the monks’ cells while the machine room was filled with a terrible high-pitched noise of the swiftly-rotating internal drum memory. The breakthrough was announced simultaneously by all

![Figure 2](https://www.cambridge.org/core/teaser)
three groups in Brussells in 1966. Soon after we experienced the IAU G.A. in Prague (1967), Prague Spring and Soviet invasion (1968). In 1969 I followed Mirek and his family to the D.A.O. in Victoria, B.C. but then our tracks divided for two decades. Mirek accepted positions at Ohio State and then UCLA while I returned back behind the Iron Curtain to Ondřejov. Needless to say we stayed in touch, although our contacts were difficult. All correspondence was censored and for some years we were not allowed to quote Mirek’s papers in our publications! Fortunately, the fairy tales occur in real world, too. After the Velvet Revolution Mirek was elected the Honorary Fellow of the Czechoslovak Astronomical Society in 1992, Honorary Fellow of the Learned Society of the Czech Republic in 1995 and he is the second recipient of the prestigious Nušl Prize of the Czech Astronomical Society (2000). Minor planet #6076 bears his name for many millions of years to come.

2.2. Alan Batten

A few years ago, many of us here gathered in Los Angeles to celebrate the seventy-fifth birthday of Mirek Plavec. As befitted someone with Mirek’s wonderful sense of humour, that was an occasion for light-hearted banter on all sides. Today, as I join in honouring someone who has been a good friend for half a century, I would like to strike a more serious note.

Mirek has been a leader in our field of the study of interacting binary stars. When we first met, each of us was heavily influenced by the late Zdeněk Kopal. The origin of the Algol systems was still a mystery, even though Crawford had published his suggestion of what we now call mass-transfer. I suspect that the younger astronomers here find it hard to believe how speculative that idea seemed in those days; Kopal argued against it consistently until the end of his life. At first I, certainly, and Mirek also, I believe, shared that skepticism. Ten years later, however, all was to change at a meeting held in Brussels in the summer of 1966 — a meeting that Mirek, Charles Worley and I all attended. I have written about that meeting in other places and will not repeat myself here. Suffice it to say that Mirek and his many students, first in what was then Czechoslovakia and later in Los Angeles, were exceedingly active in producing computations of mass-transfer and models of systems, both of which led the rest of us to a deeper understanding of the objects of our study. We owe much to those pioneers in our field even if not everything they did has stood the test of time and further observation.

Mirek is not just a scientist, however, he is also a remarkable human being who has overcome many difficulties and disappointments that would have embittered lesser mortals. Unlike many of you who will be at this symposium, I was never formally Mirek’s pupil; but I look on him as a mentor, not only in science, but also in life. My long friendship with him is a privilege for which I am thankful, and one of the most significant in my life. He and I each know that, in the nature of things, we have now lived the greater part of our allotted spans. For whatever is left and for whatever lies beyond, I wish Mirek and Zdenka well.

2.3. Gerrie Peters

I met Mirek Plavec in the early autumn of 1970, shortly after he arrived at UCLA. I was a graduate student studying chemical abundances in B stars with Lawrence Aller and had recently discovered some unusual spectral activity in the Be star HR 2142. After being introduced to me, Mirek commented “I am interested in your star HR 2142. I think it is an interacting binary.” This statement, along with a scientific collaboration that followed, opened up an entirely new line of research for me that has persisted to the present. Thank you very much Mirek! I continued to discuss new spectroscopic observations of
HR 2142 with Mirek and Ron Polidan, and these led to my first model for the system that Mirek encouraged me to present at IAU Symposium No. 51 held in Parksville, BC in September of 1972. This was the first IAU-sponsored meeting that I attended. In fact, I met many long-term colleagues there, some of whom are attending this IAU symposium. The Parksville experience was certainly a high point in my life. When the proceedings of IAUS 51 came out, I was quite surprised to find that our model had been used as a cover graphic (see Figure 3). Collaboration on interacting binary stars that display emission from circumstellar material continued, and in 1975 we assembled at another IAU symposium, IAUS 70 devoted to Be and shell stars. Along with Petr Harmanec, Mirek, Ron, and I put forth the bold hypothesis that all Be stars are interacting binaries. This created quite a stir among an audience hard-wired to the Struve model that explained the Be phenomenon as a result of critical rotation. While the current consensus does not support our 1975 idea, and the causes for the mass loss in Be stars are still unknown, the
disks and activity in some Be stars are most certainly a result of close binary interaction. We enjoyed many great times with Mirek in the mid-early 1970s, and especially liked the social events at meetings. I recall one instance when Mirek stepped up to a booth to pay for our admission to the Desert Museum in Tucson, he said “one adult and four children (Phil, Ron, Tony, and me). But you probably don’t believe they are children, so five adults!” Before we left UCLA for Cambridge, MA in 1976, Mirek and Zdenka hosted a fine dinner for us at their home (see Figure 4). It has been a long time, but Mirek’s scientific reasoning and commitment to excellence and perfection have left an indelible imprint on my own scientific character.

2.4. Al Linnell

I had only a few mail exchanges with Mirek before he and Zdenka came to the US in May 1969. He stopped in East Lansing for a visit, on his way to Ohio State; I had been at Michigan State since 1966. Mirek, Zdenka, my wife and I had a great get-acquainted boat trip on the Red Cedar river, and I quickly became aware of his wonderful sense of humor and store of stories. It was while Mirek was at Ohio State that he published his well-known paper on binary star evolution (1970, PASP, 82, 957).

In 1979, Mirek introduced his proposed binary star category of W Serpentis stars (IAU Symposium 88, p. 251). The 1988 Algols conference in Sidney, B.C., Canada (1989, Space Sci. Rev., 50, 1-382) devoted seven of the contributed papers to W Serpentis stars. The category included $\beta$ Lyrae, and Mirek subsequently urged me to work on that exotic object.


Most of my interaction with Mirek has been on a professional level, and has been conducted by email. While visiting my older daughter in Los Angeles I have been a guest in Mirek’s home. The 2001 Los Angeles symposium honoring Mirek (Proc. Astr. Inst. Acad. Sci. Czech. Rep., 89) was a wonderful event celebrating many of Mirek’s interests in stellar astronomy, and I was honored to have been included among the participants. I want to take this opportunity to salute my friend Mirek and offer congratulations on an illustrious career in astronomy.

2.5. Ivan Hubeny

I have been interacting with Mirek for many years, 39 to be exact. Indeed, our first interaction occurred in 1967, but this time it was only one-sided. I was my first year at the university and was spending a few weeks at the Ondrejov Observatory as a summer student. I of course noticed Mirek because he was already quite famous; from my childhood I have read many of his semi-popular books on stars, history of astronomy, and
even comets and meteors. Mirek was busy, and I was just one student out of several, so he did not notice me at all.

Then in 1969 he didn’t return from his trip to Canada and USA, and thus ceased to officially exist in the normalization-period Czechoslovakia, and consequently no contact with him was officially allowed. Nevertheless, my colleagues from the Stellar Department, where I have in between begun working, were occasionally meeting him on conferences abroad, and were bringing news about how Mirek is successful in his research as well as teaching at the University of California, Los Angeles (UCLA), where he became one of the most popular professors on campus. (Much later, one colleague who was then a graduate student at UCLA, told me “When Mirek came to the Department, it was like a breath of fresh air”.)

One day in 1986 I got an air mail letter from UCLA sent by an “Undergraduate Adviser”. I was quite puzzled, feeling already a bit too old for an undergraduate student, but when I opened it I saw that it was sent by Mirek, who has concealed his name on the envelope in order not to cause me any problems at the Institute, as well as to prevent a possible confiscation of the letter by our watchful authorities. It was a very nice and encouraging letter: he has congratulated me for our recently published paper with Svatopluk Kríž on theoretical models of accretion disks, and expressed a keen interest to somehow collaborate with me on this topic. It seemed of course pretty difficult to arrange a collaboration with Mirek, but by an interesting twist of fate a few months after I got Mirek’s letter I have finally managed to escape from Czechoslovakia, and after spending almost a year in Austria waiting for a proper authorization, moved to the United States. We have been corresponding with Mirek, this time quite freely, already from Austria, and Mirek grew very anxious to finally start our actual collaboration.

The first three years I worked in Boulder, CO, which is just about one and half hour flight from LA, so I have been visiting Mirek frequently there. This was a beautiful time. I have implemented all my computer programs for modeling stellar atmospheres (in particular, my general-use code TLUSTY), accretion disks, computing stellar spectra, etc., on Mirek’s computers, and we started to work at the earnest. I have been staying with Mirek and his wife Zdenka in their house in Pacific Palisades (a beautiful suburb of LA), and during our regular walks with their legendary German sheppard named Shepinka, Mirek taught me a lot about the life in the US, about the university system, but also telling many stories and historical anecdotes about Czech and Slovak astronomers whom I only knew by name. At first I was commuting with Mirek and Zdenka (who also worked at UCLA) to the Department, but later, when I started to feel more confident with driving in Southern California, I got assigned one of their cars to be able to drive there myself on weekends or during the days they didn’t go to the Department. In other words, I was quite pampered by them. There is a metaphor in Czech to express having a truly great time which goes like “To enjoy oneself like a pig in a field of rye”; so I have proposed an upgrade of it to express the extreme version of it by saying “To enjoy oneself like Ivan in Palisades”.

But pampering aside, I really enjoyed working with Mirek very much. We were a sort of complementary. Mirek loves wild and exotic objects in the Universe, like interacting binaries (the more complex the better), symbiotic stars, Be stars, etc., while he loves and enjoys order and gentleness in everyday life, and in his interaction with Nature. I, on the other hand, love adventure, wilderness, mountain climbing in the Nature and life, but preferred to model well behaved objects like stellar photospheres (white dwarfs being the most friendly variety here), and reasonable accretion disks (after some time, however, I came to a realization that no such things exist). So, I had to tone down a little Mirek’s
excitement about interacting binaries with lots and lots of emission lines, which I could hardly model at all.

After several trials we settled on a good compromise, the famous $\beta$ Lyrae. The object is enigmatic enough that it caught Mirek’s attention already long ago, and he had already published a number of papers on it. However, after a concentrated effort during the history ($\beta$ Lyrae is said to have more published papers on than any other astronomical object), but its nature was still quite uncertain - one could not even be sure that there is an accretion disk or else something else that hides the mass-gaining star of the system. But that “something” is at least optically thick, and thus could be modeled by TLUSTY without feeling myself completely foolish (that is, just acceptably foolish).

That time I have already moved from Boulder to NASA in Greenbelt, MD, but I still kept coming to LA about twice a year. Nevertheless, a bulk of our collaboration was done by e-mail. We have explored a large number of possible models, and finally came out with a model that invoked an optically thick (but geometrically still not so terribly thick) accretion disk model whose rim indeed largely obscures the primary star, but a tiny crescent of it (an early B star) would still provide the observed UV flux. We were reasonably happy with the model, but, like many good models this one also later turned out to be wrong. (Well, not completely, but the idea of the crescent, which I admit was originally mine, didn’t work out when later confronted with detailed UV spectral energy distribution).

Over the years we remained in close contact, and continued trying to understand Mirek’s wild objects. It was always a pleasure. I remember once I came with a slogan, or my motto, in Czech but still translatable to English, which says “More than bottle of whiskey, I love accretion diskee.” (Well, not the best one, I admit, but perhaps it conveys a good spirit of our interaction).

Later, my main research interests switched somewhat from the stars and (non-existent) well-behaved accretion disks. But I have suddenly realized that there is one more thing I learned from Mirek, and will thus be able to carry his torch further - I found myself also working on wild objects: extrasolar giant planets (with their cloud formation, convective updrafts of clouds, rainouts, day-night side interactions, etc.), and even supernova explosions.

I am thus happy to carry Mirek’s spirit, and love of wild and exotic objects, for the years to come.

But, at the moment, Mirek, I salute you!

2.6. Ed Guinan

I first became acquainted with the work of Mirek Plavec while I was a graduate student at the University of Pennsylvania during the late 1960s. For one practical thing, I extensively used the tables published of the relative sizes of Roche Equipotentials from a paper published in 1964 by Mirek and Petr Kratochvíl (= Petr Harmanec) in the Bull. Astron. Inst. Czechosl. (BAC). A few years later I first met Mirek in Philadelphia during his brief visit to the University of Pennsylvania in 1970. As a recent PhD, I was strongly influenced by Mirek’s contagious enthusiasm for the study of strongly interacting binaries and was sorry to see him leave Pennsylvania. I was very impressed with his work and the joy that he got from trying to figure out mass transfer and accretion processes in semi-detached binaries. He took-on in his research some of the most complicated and difficult close binaries known. Because of this interaction with him, I soon found myself carrying out photometry of some of Mirek’s favorite stars that included $\beta$ Lyr, W Ser, U Cep and several other nasty systems.
I personally consider some of Mirek’s most important contributions to the understanding interacting close binaries to be his extensive ultraviolet spectrophotometry of very active, mass transferring and mass losing close binaries carried out with NASA’s International Ultraviolet Explorer (IUE) satellite. This research was made during the 1980s and early 1990s while he was a professor at UCLA. During this time, he published an impressive number of important papers about this work on interacting binaries made with the IUE satellite. He also received observing time at Lick Observatory to obtain high dispersion optical spectra of challenging binary systems. Also, Mirek gave invited talks and colloquia on this research with the IUE satellite. I was lucky to hear some of these talks. His talks were always well organized and presented with great vigor and enthusiasm. My only refereed publication with Mirek was during the mid-1980s in a paper about the X-ray properties of several interacting binaries made using the EINSTEIN X-ray satellite. This paper concluded that most of the X-ray emissions from these long period Algol-type systems originated from dynamo-driven magnetic coronal activity from the cooler, secondary components.

Several years ago, on the occasion of Mirek’s 75th birthday at UCLA, I had the honor of presenting a paper on the future (my prejudiced view of course) of research on close binary stars and included in the talk several of Mirek’s Favorite Stars. And now after all of these years of knowing Mirek, I point out that Mirek is (and will always remain) one of my favorite “superstars” in the study of binary stars. I am happy that this conference, held in Mirek’s homeland, is dedicated to him. All my best to you Mirek!

2.7. Petr Harmanec

I already dreamed of becoming an astronomer when I was six or seven years old. It is therefore natural that I knew Mirek’s name quite soon since he published several very fine popular books on astronomy and also wrote an astronomical commentary to the (at that time new) Czech edition of Jules Verne’s novel about the travel on a comet. But I first met him personally at the spring of 1959 on the occasion of an educational knowledge competition, run by the Czechoslovak radio for secondary-school students. It was The 23rd Radio University: To the Near and Distant Universe. In that year, the Czechoslovak government approved the purchase of a 2-m Zeiss reflector as a national facility for Czech and Slovak astronomers. Mirek was at that time a member of the Stellar Department of the Astronomical Institute of the Czechoslovak Academy of Sciences in Ondřejov and the Head of the department, Dr. Luboš Perek, made him responsible for the preparation of the site for the telescope and also for the formation of a group of young people to operate and use the telescope for the research. It was then natural that Mirek approached those of us who passed the initial tests via letters and were invited to a radio studio and told us that if some of us had a serious interest in astronomy, he or she should contact him and ask for advice. I immediately wrote a letter to Mirek and, starting in the summer of 1959, I used to come to the Ondřejov Observatory every year as a summer student. I remember that in 1959, I was accompanying Mirek every clear evening, transporting a tripod with a small telescope. At different locations around the Ondřejov Observatory, we installed the telescope, defocused it and Mirek was estimating scintillation to find a place where the seeing conditions would be best. Well, after all that, the telescope was built in a location which did not have the lowest scintillation but a solid rock to build the ground of the dome on it....

Already at that time, Mirek was very interested in semi-detached binaries and I also had the chance to participate in his early photoelectric observations of the binary light curves with a small 0.2-m refractor equipped with a photoelectric photometer and a galvanometer! Only a year later, a 0.65-m reflector, built in a collaboration with the
Astronomical Institute of the Charles University and equipped with a strip-chart recorder, was put into operation.

With Mirek’s advice, I began my studies at the faculty of Mathematics and Physics of the Charles University and Mirek later became the supervisor of my diploma thesis and — when I joined the Observatory in 1964 — also of my PhD thesis. I even had the privilege to share the office with him all the time since the spring of 1966, when the stellar department moved to a new building near the construction site of the dome of the telescope.

Mirek was very good in creating a team of collaborators and focusing the whole group on one principal topic. We all learned a lot from him. Before the installation of the telescope was finished (in summer of 1967), Mirek became aware of the possibility to model mass transfer in binaries via modified evolutionary models. In retrospect, I found admirable how quickly Mirek realized the great potential of this approach. Consider that Mirek’s interest in interacting binaries was partly inspired by Prof. Zdeněk Kopal, who was a mathematician by his education and who had strongly opposed the idea of a large-scale mass transfer in binaries. Mirek focused the whole group on the effort to develop our own computer program for modelling stellar evolution and mass transfer in binaries. It was an adventure at that time! While both competing groups, German one around Prof. R. Kippenhahn, and the Polish one around Dr. B. Paczynski, had already IBM 360 or 370 series computers at their disposal, we were using a Russian Minsk 22 which had just 4096, not Mb, not even kB but plain 4096 memory locations where both the program and data had to be stored! The computational time per one model was less than a minute for the IBM, and something like 20 minutes for us. However, the computer was a property of the Astronomical Institute and people from the Stellar Department (Mirek, S. Kríž, J. Horn and I) were the largest consumers of its computing capacity at those years. The important thing also was that Mirek had a very deep insight into the problem of semi-detached binaries and this way we were able to compete.

After the Soviet-led invasion to Czechoslovakia in August 1968, Mirek felt uncertain about the future fate of the country and took the opportunity of an invitation from his friend Dr. A.H. Batten to leave for a collaborative visit to the Dominion Astrophysical Observatory in Canada and then to Dr. R. Koch at the University of Pennsylvania. Sometimes at the end of 1969, Mirek and his family made the painful decision to remain in the USA. Already in 1968, when Dr. L. Perek became the Director of the Institute, Mirek was appointed as the Head of the Stellar Department. Before Mirek announced his decision early in 1970, my colleagues and I had very lively letter exchanges with him. Mirek was a vibrant personality of the Institute and I felt he should not give up to less competent and less generous people.

Mirek was then invited by Prof. D. Popper to come to the UCLA and soon became a very popular professor there. He always loved teaching and maybe thanks to this, he certainly also played a major role in making the theory of the mass transfer well known also in North America. He continued binary studies there and successfully applied with several colleagues for observing time to study binaries with the OAO3 Copernicus and later with the IUE satellite. With R. Koch, he became known for the identification of a group of strongly interacting binaries with numerous emission lines in the far-UV spectra which they called W Ser stars. He later published a number of important detailed studies of these objects.

For some time, Mirek and I still tried to collaborate on joint projects but it became difficult since we could only communicate via personal letters which (due to censorship) travelled typically three weeks one way. We then only maintained regular personal correspondence and exchanged reprints of our papers. Later, we had several chances to meet...
on various meetings and also in Praha when Mirek received US citizenship and could come privately to visit his mother. When in 1972 P. Koubský, J. Krpata and I discovered that the Be star 88 Her is a 87-d binary, Mirek very kindly provided us with his Lick spectra which were instrumental to eliminate 1-d aliases of the orbital period. Ironically, we were not allowed to thank him in the Acknowledgements for this. So, I am doing that in written form at least now, after 34 years...

Many happy returns to Praha, Mirek!

Figure 5. Foto Martin Šolc.