EDITORIAL

Ben L. G. Bakker

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When Few-Body Systems was created 23 years ago, Professor Willibald Plessas was Associate Editor, while Professor Mitter was Editor. Four years later, Professor Plessas became Managing Editor and in 2003 he became Editor-in-Chief, a position he fulfilled until 2004.

Professor Plessas helped create a niche journal where atomic, nuclear, and particle physicists as well as colleagues working in solid state physics or chemistry would find a forum for research at the precision frontier both experimentally and theoretically. Over the years, the few-body community has witnessed a sustained interest in physical systems with a limited number of degrees of freedom, yet sufficiently complex to demonstrate interesting, at times even puzzling behavior.

In few-nucleon systems chiral effective field theory (χEFT) has made a great impact. This approach has been developed to the point where it can be used to describe two- and three-nucleon systems with the same precision as boson-exchange interactions. As the language of χEFT is so different from the boson-exchange story, one might have hoped that it could solve some of the outstanding puzzles in few-nucleon scattering, namely the one known as the 'A_y puzzle'. This is the name covering a set of discrepancies between our best theories and most accurate experiments concerned with spin observables in nucleon–deuteron scattering. Still, this hope has until now not been fulfilled, which means that more work needs to be done and perhaps new ideas are called for.

Another surprising development during the time Professor Plessas was in office, took place in the physics of ultra-cold atoms. A path-breaking paper by Vitaly Efimov (1971) suggested that in systems with very small binding energy the dynamics could be described by a single scattering parameter, the scattering length a, only. At the time of publication, this idea seemed to be a curiosity, as scattering lengths had just to be taken as a given and in nuclear physics only one system with a great scattering length is known: two nucleons in the $^1S_0$ state. However, when it was discovered that in some extremely cold atomic systems the scattering length of atom–atom scattering could be varied through a Fesbach resonance, where a runs from a negative value to a positive one, passing $\pm$ infinity, the ideas first put forward by Efimov gained new interest. Presently, experimental and theoretical groups are working very intensely to unravel the physics of these intriguing systems.

Last but not least, there are developments in solid-state physics, where small devices—quantum dots—can be made, that can bind only a few electrons at a time. Such novel systems can be viewed as artificial atoms in which the number of electrons can be varied. The skills of the experimentalists to almost customize these solid-state devices are growing, spurring the theoreticians to hone their methods for explaining their properties.

All these developments show that the few-body community is very much flourishing. Few-Body Systems, under the leadership of Professor Plessas played its role as a forum where these exciting developments and many more, could be published. On the occasion of his 60th birthday, Few-Body Systems publishes by way of a birthday present, the special issue that lies before you. Several colleagues who have in one way or another

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crossed the path of Willi Plessas in physics, have contributed original papers to this issue. The wide variation of topics treated in these papers testifies to the versatility of Willi as a physicist. Willi, please accept this issue dedicated to you as a token of our appreciation for you as a physicists and for your role as Editor of Few-Body Systems for so many years.

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Congratulations!
Ben L. G. Bakker
Editor-in-Chief

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