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Prof. Rob de Ruyter van Steveninck
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Application of Dr. Zhisong Wang, born July 15th, 1969 presently at the Department of Chemistry and Biochemistry at the University of Texas at Austin / Texas, USA for the open position in your university

Dear Prof. van Steveninck,

Dr. Zhisong Wang came to me in 1996 from the Fudan University from Shanghai with a DAAD scholarship for outstanding students.

It turned out that indeed he was very outstanding. The Fudan University of Shanghai is rating number three in physics all over China. Thus he came with an excellent education in all fields needed for his thesis.

During the three years he was working on his thesis about "Strangeness flow in heavy ion reactions in quantum molecular dynamics and in relativistic quantum molecular dynamics". He has published during his work on the thesis eleven papers in refereed journals, most of the papers where either published in "Nucl. Phys." (the leading journal in this field), in "Phys. Rev." or in "Phys. Rev. Lett.".

As I mentioned already above, he turned out to be one of my very best students. I have no doubt that I can put him under the more than 50 PhD students which worked with me among the top 5 %. He studied in his thesis the production of pions and especially kaons in heavy ion collisions. Positive charged kaons turned out to be excellent probes for hot and dense nuclear matter in a heavy ion collision since they have a long meanfree path. In this way they are able to yield information about the density and the temperature in the hot compression zone. This allows probing the equation of state at densities and temperatures which cannot be reached in other ways.



The approach he was using to study these reactions and to extract information about the equation of state of nuclear matter was quantum molecular dynamics or relativistic quantum molecular dynamics. In this approach one follows the orbit of each nucleon in the self-consistent field of the others and in case of the collision of two nucleons one calculates the cross sections for elastic scattering, for excitation of the nucleons into baryonic resonances and for the production of new particles like mesons or even anti-nucleons. What happens then in one collision is decided by Monte Carlo methods, taking naturally into account the Pauli principle and energy and momentum conservation in the collision.

Quantum molecular dynamics or even relativistic quantum molecular dynamics are very complicated large computer codes which are extremely difficult to implement and to test and need also large computer power. If one scatters for example a gold nucleus on an other gold nucleus, one has to follow about 400 particle time step by time step and calculate the force which all the other particles exert on one of the particles. In the relativistic version, each particle has its own time and in each collision one is transforming by a Lorentz transformation into the center of mass frame of the two particles.

During his thesis Dr. Zhisong Wang developed in one of the five international leading scientists in this field.

When he left us, he changed his field in describing the properties of large molecules and in investigating the interaction of molecules with surfaces.

I want to summarize:

Dr. Zhisong Wang is an exceptionally good young scientist with outstanding research results now in several fields. He has also a large experience in implementing complex computer programs. He could excellently collaborate with my younger students. Thus I think that he will be able to take care himself now of young students and is able to give excellent lectures.

I can strongly recommend him for the open position in your university.

With best regards,

Sincerely yours,

Amand Faessler

(Full Professor of Physics)

