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Dr. Miguel Alcubierre Moya
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Dear Professor Moya,

It is with great pleasure to write a letter in support of a position of "profesor emérito" of the "Universidad Nacional Autónoma de México" for Professor Peter Hess. Peter Hess is an outstanding theorists with an impressive track record not only in nuclear physics but also in the field of particle physics and general relativity. Professor Hess has a worldwide reputation in the field and I believe that giving him the opportunity to continue his research as "profesor emérito" would be very beneficiary for UNAM and its scientific program in the future.

Professor Hess deserves such a position judging by his multiple and important contributions to science building on the common theme of the application of "Symmetry" principle in physics utilizing methods in group theory. He developed a gradient formula for a U(2l+1) group, which makes it possible to calculate any matrix element of a function in the momenta followed by a general reduction procedure in U(n), reducing the problem to purely symmetric and antisymmetric irreducible representation, simplifying enormously the reduction problem.

In nuclear physics Professor Hess is known for the contribution in the geometric model of the nucleus, called know the "Frankfurt Model". This model is able to describe any even-even nucleus with one or more potential minima. It is a classical contribution in nuclear structure physics and is referred to in several textbooks and still cited today. Notable in this context are his contributions in using the geometrical mapping to predict the collective quadrupole structure of heavy and super-heavy nuclei.
Nuclear cluster physics is a rapidly evolving field with multiple applications from nuclear structure to nuclear astrophysics. Peter Hess counts as one of the pioneers with his contributions in the algebraic models of nuclear cluster, specifically in the "Semi-Microscopic Algebraic Cluster Model". Again, the contributions are related to the geometrical mapping for illustrating the form of the cluster system and its applications all over the nuclear chart, from light to heavy nuclei, discussing for example preferences of decay and calculations of

spectroscopic factors for clusterized nuclear configurations. In particular the latter has great impact on the predictions of reactions rates not accessible to experiment such as late stellar evolution fusion and explosive nucleosynthesis processes.

Nuclear molecules have been a fascinating concept. Already in the years from 1982-1984 Peter Hess designed a geometric model for heavy nuclear molecules, consisting of two clusters which he later extended to three clusters. In particular from my view as nuclear astrophysicist I see multiple applications of such a model to many of the open questions in carbon and oxygen stellar fusion environments, that not only dictate the latest phases of stellar evolution prior to core collapse but also determine rapid still not fully understood the ignition of stellar explosions such as type I a supernovae (accreting or merging white dwarfs), or superbursts in the atmosphere of accreting neutron stars.

Peter Hess's contributions to particle physics are based on methods that are based on many-body techniques developed in nuclear physics. This underlines his capability to think across boundaries and make novel and important contributions. For particle physics he applied his knowledge to the development of non-perturbative methods to describe QCD at low energy. Up to now mainly effective models were published, which recently were expanded to using the real QCD Hamiltonian in the Coulomb gauge.

Since 2008 several contributions were published by Professor Hess to extend algebraically the theory of general relativity to pseudo-complex coordinates. This theory contains the possibility to avoid the formation of the event horizon, though there is no difference in solar system experiments. The theory includes possible quantum contributions due to the presence of a mass. Notable from my point of expertise are the multiple applications in neutron star physics which certainly is a driving theme in science today.

In summary, Professor Hess is an internationally known scientists with important contributions in multiple fields of physics. He has published nearly two-hundred peer-reviewed scientific papers, numerous book contributions and conference proceedings. In addition he has published an impressively large number of broader or more general papers and contributions for the broader public. His works are broadly cited in the scientific literature and in textbooks. His scientific activities are well recognized as reflected in multiple invitations and in several international grants and awards.

I strongly believe that Professor Peter Hess is a prime candidate for "profesor emérito" of the "Universidad Nacional Autónoma de México" and I give him my strongest recommendation

With best regards

Michael Wiescher
Freimann Professor of Physics
Director Notre Dame Nuclear Science Laboratory
and the Institute for Structure and Nuclear Astrophysics