Brief CV

Name	Khairul Anwar Bin Mohamad Khazali	中文名		
Gender	Male	**Title** (Pro./Dr.)	Dr.	
Position （President…）	Senior Lecturer	**Country/ Region**	Malaysia	
University/ Department	Universiti Malaysia Perlis/ Institute of Engineering Mathematics			
Personal Website				
Research Area	Theoretical Physics and Applied Mathematics			

Brief introduction of your research experience:

Theoretical physics : An outstanding problem in Variational Monte Carlo (VMC) calculations with realistic interactions like Argonne V18 and Urbana IX three-body interactions is that p-shell nuclei turn out to be grossly under bound as compared to the Green's Function Monte Carlo (GFMC) calculations. A similar situation exists in Diffusion Monte Carlo calculations with somewhat simplified interactions. In particular ^{6}Li is unstable against the breakup into an alpha particle and a deuteron within the VMC framework. As a result the VMC calculations can not be used with confidence in hypernuclei. Hitherto all the calculations in hypernuclei have been performed with very simple interactions. In this contribution, we make an attempt to improve upon the VMC calculations by bringing about several variations in the established procedure of performing variational calculations. We introduce and implement the following three variations. These are: (1) After making an error analysis of the radial part of the variational wave function we make a correction through expanding the radial part in terms of a complete set and treat the expansion coefficients as variational parameters . (2) We then variationally distinguish between the various components of the two-body Jastrow and operatorial correlations which are operated upon by three-body and spin-orbit correlations , and finally, (3) we also variationally distinguish between the operatorial correlations at the different levels of cluster expansion. This is based on the observation that the correlation links in the expansion of the wave function in terms of the central, spin, isospin, tensor and tensor isospin correlations are variationally different at different number of these links. We also augment these correlations with similar but variationally different auxiliary terms at two or more correlation links. This is a major departure for earlier studies. Our preliminary results for ^{3}H and ^{4}He demonstrate the usefulness of this generalization. With AV18 and UIX, we find that the ^{3}H energy becomes -8.441(1) MeV from -8.38(1). Compared to exact result of the momentum space Faddeev (-8.474 MeV) or GFMC (-8.46(1) MeV) calculations it is marginally higher.

Applied Mathematics : My research focuses on the development of mathematical and computational models for blood flow problems. It is a theoretical investigation where we seek to develop appropriate mathematical models to interpret and enhance understanding of blood flow characteristics to help elucidate and explain experimental findings and observed phenomena. The numerical solutions obtained provide a means for which other exact or approximate solutions can be vindicated and validated.

*******All the columns need to be filled in.**