

Restoring broken symmetries within the nuclear Energy Density Functional method

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Lecture series of the *Espace de Structure Nucléaire Théorique*

September 12, 2011

and

Workshop of the *Espace de Structure Nucléaire Théorique*

September 13-15, 2011

CEA/SPhN, Orme des Merisiers, build. 703, rooms 125/135, F-91191 Gif-sur-Yvette Cedex

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Lectures	Workshop		
<i>Mon. Sept. 12th</i>	<i>Tue. Sept. 13th</i>	<i>Wed. Sept. 14th</i>	<i>Thu. Sept. 15th</i>
<i>Room 125</i>	<i>Room 125</i>	<i>Room 135</i>	<i>Room 135</i>
	09h30 <i>Welcome</i>		
09h15 <i>Welcome</i>	09h45 Robledo	09h45 Lacroix	09h45 Sadoudi
09h30 Nogga 1	10h30 Break	10h30 Break	10h30 Break
10h45 Break	11h00 Heenen	11h00 Bender	11h00 Yao
11h15 Nogga 2	11h45 Scuseria	11h45 Rodriguez	11h45 Rodriguez-Guzman
12h30 Lunch	12h30 Lunch	12h30 Lunch	12h30 Lunch
14h15 Duguet 1	14h30 Reinhard	14h30 Satula	14h30 Libert
15h30 Break	15h15 Break	15h15 Break	15h15 Break
16h00 Duguet 2	15h45 Messud	15h45 Hupin	15h45 Hinohara
17h15 End	16h30 Bertsch	16h30 Vretenar	16h30 End
	17h15 End	17h15 End	
	20h00 Dinner		

1. Introductory lectures

- (a) A. Nogga, *Basics of group theory for quantum systems*
- (b) T. Duguet, *Breaking and restoring symmetries within the nuclear Energy Density Functional method*

2. Symmetry-restored calculations

- (a) P.-H. Heenen, *3D angular momentum and particle number restored calculations with the Skyrme EDF*
- (b) T. R. Rodríguez, *3D angular momentum and particle number restored calculations with the Gogny EDF*
- (c) J. M. Yao, *3D angular momentum restored calculations with a relativistic point-coupling Lagrangian*
- (d) W. Satula, *3D angular momentum and isospin restored calculations with the Skyrme EDF*
- (e) R. R. Rodriguez-Guzman, *3D linear momentum restored calculations with the Brink-Boeker interaction*
- (f) G. Scuseria, *Number and fully spin-projected (VAP) HFB method applied to electronic structure problems*

3. Formal aspects of the symmetry-restored nuclear EDF method

- (a) L. M. Robledo, *Consistency requirements for symmetry restorations within the nuclear EDF method*
- (b) D. Lacroix, *Regularization of non-diagonal energy density functional kernels*
- (c) J. Sadoudi, *New generation of regularizable Skyrme EDF parameterizations*
- (d) M. Bender, *Regularized angular momentum and particle number restored calculations with the Skyrme EDF*
- (e) G. Berstch, *Overlaps: how to?*

4. Alternatives

- (a) P.-G. Reinhard, *Topological GOA for symmetry restorations within the nuclear EDF method*
- (b) J. Libert, *5D collective Hamiltonian with the Gogny EDF*
- (c) D. Vretenar, *5D collective Hamiltonian with a relativistic EDF*
- (d) N. Hinohara, *On the microscopic theory of large-amplitude collective motion*
- (e) G. Hupin, *On the formulation of a functional theory for pairing with particle number restoration*
- (f) J. Messud, *Internal Density Functional Theory*