

# INT 13-52W Workshop, Nuclear Structure and Dynamics at Short Distances

## Monday, February 11

8:00 – 9:00 Registration in room C411 / INT

### All Talks in C-520

Nuclear Physics and Many-Body Problem

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| 9:00-9:05   | Welcome  |
| 9:05-9:30   | Overview of Issues and the Goal of the Meeting<br>Rolf Ent   |
| 9:30-10:15  | Nuclear Structure Studies from Short to Medium Distances<br>James Vary                                   |
| 10:15-10:45 | Break  |
| 10:45-11:30 | The Nuclear Dependence of the EMC Effect and Short-Range<br>Correlations<br>Nadia Fomin                  |
| 11:30-12:15 | Short Range Correlation and Transport Theory<br>Ulrich Mosel   |
| 12:15-2:00  | Lunch  |
| 2:00-2:45   | High Resolution Probes of Low Resolution Nuclei<br>Richard Furnstahl                                     |
| 2:45 -3:30  | The mass and isospin dependence of short-range<br>correlations<br>Jan Ryckebusch                         |
| 3:30-4:00   | Break  |
| 4:00-4:45   | Short-range correlations studied with unitarily<br>transformed interactions and operators<br>Thomas Neff |
| 4:45-5:30   | Discussion on Probing Nuclear Structure at Small<br>Distances  |

## Tuesday, February 12

Nuclear Physics and QCD

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| 9:15-10:15  | New Perspectives for Hadron and Nuclear Physics<br>Stan Brodsky        |
| 10:15-10:45 | Break  |
| 10:45-11:30 | Measuring transverse shape with virtual photons<br>Paul Hoyer          |
| 11:30-12:15 | QCD, nuclei and the EMC effect<br>William Detmold                      |
| 12:15-2:00  | Lunch  |
| 2:00-2:45   | Theory of GPD's in Nuclei<br>Simonetta Liuti                           |
| 2:45-3:30   | Chiral Dynamics and Peripheral Transverse Densities<br>Carlos Granados |
| 3:30-4:00   | Break  |

- 4:00-4:45            Basis Light-front Quantization Approach to Quantum  
Field Theory  
Xingbo Zhao
- 4:45-5:30            Discussion: QCD Degrees of Freedom in Nuclei

### **Wednesday, February 13**

#### Short Range Correlations in Nuclei

- 09:15-10:15        Short Range Nucleon Correlations  
Claudio Ciofi degli Atti
- 10:15 – 10:45      Break
- 10:45-11:30        Two Nucleon SRC and Inclusive Electron Scattering off Nuclei  
Chiara Benedetta Mezzetti
- 11:30-12:15        New Results on SRC from Inclusive Measurements at JLab  
Patricia Solvignon
- 12:15-2:00         Lunch
- 2:00-3:00          Interaction vs correlation effects  
Omar Benhar

### **Thursday, February 14**

#### Hadrons in the Nuclear Medium/EMC Effect

- 9:15-10:15        Theoretical Overview of the EMC Effects  
Gerald Miller
- 10:15 – 11:00      Break
- 11:00-12:00        Experimental Overview of Past and Future Studies of EMC  
Effects  
Dave Gaskell
- 12:00-2:00         Lunch
- 2:00 - 3:00         Probing Nucleons in the Nuclear Medium  
Steffen Strauch
- 3:00-3:30         Break
- 3:30-4:30         Review of EMC/SRC Correlation Studies  
Or Hen

### **Friday, February 15**

#### Short Range Correlations and Infinite Nuclear Matter

- 9:15-10:15        New Properties of High Momentum Distribution of Nucleons  
and their Implication for Nuclear Matter  
Misak Sargsian
- 10:15-11:00        Break
- 11:00-12:00        Role of short-range correlations in finite nuclei and nuclear  
matter  
Willem Dickhoff

## Week II

### Monday, February 18

#### Quarks in the nuclear Medium

- 9:15-10:15      Deep inelastic lepton scattering from nuclear targets at  $x > 1$   
James Vary
- 10:15 – 11:00      Break
- 11:00-12:00      The Impact of Different Structure Function Measurements on  
Nuclear PDFs, Shadowing, Anti-Shadowing, and the EMC Effect  
Cynthia Keppel
- 12:00-2:00      Lunch
- 2:00-3:00      Medium Modification of Azimuthal Asymmetries in SIDIS  
Harut Avakian
- 3:00 - 3:30      Modeling Nuclear Parton Distribution Functions  
Heli Honkanen
- 3:30 - 4:30      Discussion: Parton Distributions in the Nuclear Medium

### Tuesday, February 19

#### Nuclear Structure at Short Distances

- 9:15-10:15      Light Cone Nuclear Physics and SRC/EMC Effects  
Mark Strikman
- 10:15 – 11:00      Break
- 11:00-12:00      Short Distance Studies of the Deuteron  
Werner Boeglin
- 12:00-2:00      Lunch
- 2:00-3:00      Tensor Structure of the Deuteron in Deep Inelastic Scattering  
Shunzo Kumano
- 3:00-4:00      Infrared and ultraviolet cutoffs in variational calculations with a  
harmonic oscillator basis  
Sidney Coon
- 4:00 - 5:00      Discussions: Nuclear Structure and Medium Modifications

### Wednesday, February 20

#### Data Mining and New Experiments in SRC/EMC Studies

- 8:45-9:30      CLAS Data Mining Initiative  
Lawrence Weinstein
- 9:30-10:00      Recent Results from Exclusive Studies of Two-Nucleon SRCs  
Or Hen
- 10:00-10:15      Mining for  $N^*$   
Werner Boeglin
- 10:15-10:45      Break
- 10:45-11:15      Monte Carlo Simulations for  $(e, e'pp)$  Reactions  
Maarten Vanhalst

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| 11:15-11:45 | Cross Sections on the $^{12}\text{C}(e,e'p)$ Reaction at High Missing Momentum<br>Vincent Sulkosky   |
| 11:45-12:15 | T2K $\nu_{\mu}$ appearance results SciBooNE/MiniBooNE joint search for sterile neutrinos<br>Kendall Mahn   |
| 12:20-2:00  | Lunch  |
| 2:00 – 2:30 | Multi-nucleon excitation of $^4\text{He}$ following $2\text{N}$ emission<br>A report on $(e,e'd)$ and $(e,e'pn)$ analysis of Hall A EXP 07-006<br>Igor Korover |
| 2:30-3:00   | Future Experiments in EMC/SRC Studies<br>Douglas Higinbotham   |
| 3:00 -3:30  | Hall C Upgrade for SRC/EMC Studies<br>Stephen Wood   |
| 3:30-4:00   | Break  |
| 4:00-4:30   | Probing Phi-Mesons in Deuteron Break-Up Reactions<br>Adam Freese   |
| 4:30-5:30   | Discussion: Preparing Joint SRC program for JLab-12  |

## Thursday, February 21

### Universality of Short Range Correlation Dynamics

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|-------------|---|
| 9:15-9:45   | New Properties of High Momentum Component of Asymmetric Nuclei<br>Misak Sargsian            |
| 9:45-10:30  | Probing Protons in Asymmetric Nuclei<br>Eli Piassetzky                                      |
| 10:30-11:00 | Break   |
| 11:00-12:00 | Connecting Neutron Star Observations to Nuclear Forces<br>Andrew Steiner                    |
| 12:00-2:00  | Lunch   |
| 2:00-3:00   | What are the properties of a spin polarized unitary Fermi gas?<br>Aurel Bulgac              |
| 3:00-4:00   | Discussion: Universal Properties of Short Range Correlations in Two Component Fermi Systems |

## Friday, February 22

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|---------------|--|
| 9:15-10:15    | High Momentum beamline projects at J-PARC<br>Shunzo Kumano       |
| 10:15-11:00   | Break  |
| 11:00 – 11:45 | Perspectives of Studying SRCs with Hadron Beams<br>Mark Strikman |
| 11:45-12:15   | Discussion: New Experiments for SRC and EMC Studies              |

Adjourn