

Quantum Materials for Energy Science

Field Work Proposal Number:

Brookhaven National Laboratory

Principal Investigator:

Cedomir Petrovic

Condensed Matter Physics & Materials Science Dept.

Brookhaven National Laboratory

P.O. Box 5000

Upton, NY 11973-5000

Phone: 631-344-7547

E-mail: petrovic@bnl.gov

Co-Principal Investigators:

Igor Zaliznyak, Physicist

Alexei Tselik, Physicist

Weiguo Yin, Physicist

Requested Funding FY 18: \$1,106,235

Requested Funding FY 19: \$1,132,665

Requested Funding FY 20: \$1,164,659

Total Requested Funding:xx

Use of Human Subjects: No

Use of Vertebrate Animals: No

Official Signing for Brookhaven National Laboratory:

Jim Misewich,

Associate Lab Director Basic Energy Sciences

Brookhaven National Laboratory P.O. Box 5000

Upton, NY 11973-5000

Phone: 631-344-3501

E-mail: misewich@bnl.gov

Principal Investigator Signature/Date: _____

Laboratory Official Signature/Date: _____

EXPLORATORY MATERIALS SYNTHESIS AND CHARACTERIZATION

Brookhaven National Laboratory

Field Work Proposal Number: PM-016

B&R Code: KC0201050

Principal Investigator:

Cedomir Petrovic
Brookhaven National Laboratory
P.O. Box 5000
Upton, NY 11973-5000
Phone: 631-344-5065
Fax: 631-344-2739
Email: petrovic@bnl.gov

Requested Funding for 1st year: \$ 558,000
Requested Funding for 2nd year: \$ 574,000
Requested Funding for 3rd year: \$ 592,000
Total Requested Funding: \$1,724,000

Use of Human Subjects: No

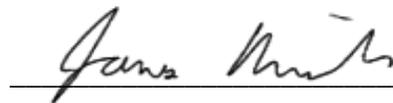
Use of Vertebrate Animals: No

Official Signing for Brookhaven National Laboratory:

James Misewich, Associate Lab Director
Basic Energy Sciences
Brookhaven National Laboratory
P.O. Box 5000
Upton, NY 11973-5000
Phone: 631-344-3501
Fax: 631-344-3075
Email: misewich@bnl.gov



Principal Investigator Signature/Date



Laboratory Official Signature/Date

BULK MATERIALS SYNTHESIS AND CHARACTERIZATION

Brookhaven National Laboratory

1. Field Work Proposal Number: PM-013

B&R Code: KC0202010

Principal Investigator:

Cedomir Petrovic
Brookhaven National Laboratory
P.O. Box 5000
Upton, NY 11973-5000
Phone: 631-344-5065
Fax: 631-344-2739
Email: petrovic@bnl.gov

Requested Funding for 1 st year:	\$ 605,348
Requested Funding for 2 nd year:	\$ 621,774
Requested Funding for 3 rd year:	\$ 638,877
Total Requested Funding:	\$1,865,999

Use of Human Subjects: No

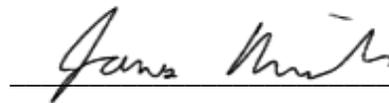
Use of Vertebrate Animals: No

Official Signing for Brookhaven National Laboratory:

Jim Misewich, Associate Lab Director
Basic Energy Sciences
Brookhaven National Laboratory
P.O. Box 5000
Upton, NY 11973-5000
Phone: 631-344-3501
Fax: 631-344-3075
Email: misewich@bnl.gov



Principal Investigator Signature/Date



Laboratory Official Signature/Date



Alexander von Humboldt
Stiftung/Foundation

Alexander von Humboldt-Stiftung · Jean-Paul-Str. 12 · D-53173 Bonn

Herrn Prof. Dr. Cedomir Petrovic
Brookhaven National Laboratory
Department of Condensed Matter Physics and
Materials Science
20 Pennsylvania Avenue, Building 510 B Physics
Upton, NY 11973
USA

Der Präsident

Ansprechpartnerin:
Alexandra Justus

Tel.: +49 (0)228 / 833-480
Fax: +49 (0)228 / 833-217
E-Mail: alexandra.justus@avh.de

Unser Zeichen: 3.1-USA/1143559 STP

Datum: 5. August 2011

Sehr geehrter Herr Professor Petrovic,

ich freue mich, Ihnen mitteilen zu können, dass Ihre Bewerbung um ein Forschungsstipendium der Alexander von Humboldt-Stiftung Erfolg hatte. In Anerkennung Ihrer bisherigen wissenschaftlichen Arbeiten hat der Auswahlausschuss Ihnen ein

Forschungsstipendium für erfahrene Wissenschaftler

für die Dauer von **12** Monaten verliehen. Die Höhe des Forschungsstipendiums beträgt monatlich **2.450 EUR**. Der Beginn des Forschungsstipendiums ist auf den **01. November 2011** festgelegt worden.

Die "Richtlinien und Hinweise für Forschungsstipendiaten" sind Bestandteil der Stipendienverleihung.

Bitte teilen Sie dem Sekretariat der Alexander von Humboldt-Stiftung auf der beiliegenden Annahmeerklärung innerhalb von vier Wochen nach Erhalt dieses Schreibens mit, ob Sie das Forschungsstipendium zu dem angegebenen Termin annehmen.

Zur Verleihung des Forschungsstipendiums der Alexander von Humboldt-Stiftung gratuliere ich Ihnen herzlich.

Mit freundlichen Grüßen

Professor Dr. Helmut Schwarz



Alexander von Humboldt
Stiftung/Foundation

Alexander von Humboldt-Stiftung · Jean-Paul-Str. 12 · D-53173 Bonn

Prof. Dr. Cedomir Petrovic
Brookhaven National Laboratory
Department of Condensed Matter Physics and
Materials Science
20 Pennsylvania Avenue, Building 510 B Physics
Upton, NY 11973
USA

Der Präsident

Ansprechpartnerin:
Alexandra Justus

Tel. : +49 (0)228 / 833-480

Fax : +49 (0)228 / 833-217

E-Mail: alexandra.justus@avh.de

Unser Zeichen: 3.1-USA/1143559 STP

Datum: 5. August 2011

TRANSLATION

Dear Professor Petrovic,

I am pleased to inform you that your application for a research fellowship from the Alexander von Humboldt Foundation has been successful. In recognition of your previous scientific work you have been awarded a

Research Fellowship for experienced researchers

by the Selection Committee for a period of **12** months. The monthly amount of your fellowship is **EUR 2,450**. Your research fellowship is scheduled to begin on **November 1, 2011**.

The "Guidelines and Information for Research Fellows" are a constituent part of the fellowship award.

Please inform the Alexander von Humboldt Foundation whether you accept the research fellowship for the dates indicated above by returning the enclosed acceptance form within 4 weeks of receipt of this package.

I would like to congratulate you on being awarded a research fellowship from the Alexander von Humboldt Foundation.

Yours sincerely,

signed

Professor Dr. Helmut Schwarz



**BITTE ALS DOPPELSEITIGES DOKUMENT UNTERSCHREIBEN /
PLEASE SIGN AS A TWO-SIDED DOCUMENT**

**Forschungsstipendium für erfahrene Wissenschaftler /
Research Fellowship for experienced researchers
Annahmeerklärung / Acceptance Form**

Jean-Paul-Str. 12 · D-53173 Bonn · Tel: +49 (0)228-833-480 · Fax: +49 (0)228-833-217
E-Mail: alexandra.justus@avh.de · http://www.humboldt-foundation.de

Ich nehme das Forschungsstipendium an. Ich habe das Verleihungsschreiben der Alexander von Humboldt-Stiftung sowie die Broschüre "Richtlinien und Hinweise für Forschungsstipendiaten" erhalten, mit den darin enthaltenen Bedingungen erkläre ich mich einverstanden.

I accept the research fellowship. I have received the award letter from the Alexander von Humboldt Foundation as well as the brochure "Guidelines and Information for Research Fellows", I agree to the conditions therein.

Ich akzeptiere die folgenden Termine für das Forschungsstipendium in Deutschland:

(Änderungen bitte auf separatem Blatt begründen.)

I accept the following dates for the research fellowship in Germany:

(Please comment on changes on a separate sheet.)

1. ^{December} ~~November~~ 2011 - 30. ^{May} ~~April~~ 2012
1. April 2014 - 30. September 2014

(as agreed in my communication with AvH and my host)

Datum meiner Ankunft in Deutschland:

Date of my arrival in Germany:

30. November 2011

Gastinstitut, wissenschaftlicher Gastgeber:

Host institute, scientific host:

Helmholtz Zentrum Dresden-Rossendorf - HZDR
Institut Hochfeld-Magnetlabor Dresden
Bautzner Landstraße 400
01328 Dresden
Prof. Dr. Joachim Wosnitza

Die Kosten für meine An- und/oder Rückreise(n) zum Gastinstitut werden von dritter Seite getragen bzw. ich habe eine solche Unterstützung beantragt.

The cost of my travel to and from the host institute will be borne by a third party or I have submitted an application for such support.

Ja / Yes:

Nein / No:

In Höhe von / In the amount of: EUR _____

Mein(e) Ehepartner(in) und ___ Kind(er) wird/werden mich begleiten. Bitte Aufenthaltszeit angeben, ggf. auf separatem Blatt.

I will be accompanied by my spouse and ___ child(ren). Please indicate period of stay, if necessary on a separate sheet.

Ehepartner(in) / spouse: **Zorana Petrovic**

von/from: 01. Dec. 2011 bis/to: 31. May 2012

Kind(er) / child(ren):

von/from: 01. Dec. 2011 bis/to: 31. May 2012

von/from: 01. Dec. 2011 bis/to: 31. May 2012

Die weitere Korrespondenz soll an diese Anschrift gesandt werden: (Bitte korrigieren, falls Änderung.)

Further correspondence should be sent to this address: (Please correct in case of changes.)

Prof. Dr. Cedomir Petrovic
Brookhaven National Laboratory
Department of Condensed Matter Physics and
Materials Science
20 Pennsylvania Avenue, Building 510 B Physics
Upton, NY 11973
USA
petrovic@bnl.gov

USA 1143559 STP

Ich erkläre hiermit, dass diese Angaben richtig und vollständig sind und dass ich gesundheitlich in der Lage bin, das geplante Forschungsvorhaben durchzuführen.

I hereby declare that the above statements are correct and complete and that I am not aware of any health issues that would impede my ability to carry out the proposed research project.

Ich bin damit einverstanden, dass meine persönlichen Daten von der Alexander von Humboldt-Stiftung für administrative Zwecke, einschließlich der Begutachtung, Statistik und Evaluation durch die Stiftung und deren Beauftragte, elektronisch gespeichert und verarbeitet werden. Ich stimme ferner zu, dass die folgenden Daten durch die Alexander von Humboldt-Stiftung veröffentlicht werden dürfen: Name, Vorname, akademischer Titel, Land, Kontaktdaten der Institution, an der ich tätig bin, Stellung, Kontaktdaten der vorgesehenen Gastinstitutionen und wissenschaftlichen Gastgeber (soweit anwendbar), Förderzeiten, Datum und Umfang der Förderentscheidung, Bezeichnung der Fördermaßnahme, Fachgebiet und Schlüsselbegriffe zur Definition meines speziellen Forschungsthemas während der Förderung.

The Alexander von Humboldt Foundation has my permission to store and process my personal information in an electronic format for administrative purposes including peer review, statistical analysis, and evaluation by the Foundation and its commissaries. The following data may be published by the Alexander von Humboldt Foundation: first name, last name, academic title, country, contact details of the institution at which I am working, position, contact details of the proposed host institutions and academic hosts (if applicable), sponsorship period, date of sponsorship decision and award amount, description of sponsorship action, research area and key words to describe my particular field of research during the sponsorship period.

Upton, NY USA 25. August 2011

Ort und Datum / Place and date

Cedomir Petrovic

Eigenhändige Unterschrift / Personal signature



Canadian Institute for
Advanced Research

09 June 2008

Professor Cedomir Petrovic
Condensed Matter Physics and Materials Science Department
Building 510B Condensed Matter Physics
Brookhaven National Laboratory
Upton, NY 11973
USA

Dear Professor Petrovic,

On the recommendation of the Director, Louis Taillefer, and his Program Advisory Committee, I am delighted to confirm your appointment as an Associate in CIFAR's Program in Quantum Materials. This appointment is for the duration of the current program, and will be in effect for the period effective from this date and ending June 30, 2013.

As you are aware, CIFAR is a private, non-profit organization. Our goal is to address large questions of intellectual importance that reach beyond the knowledge base of a single individual, discipline or institution. As well, the Institute strives to build interdisciplinary research strengths in areas of special importance to the long-term scientific, economic and social development of Canada.

CIFAR is proud to welcome you as an Institute member, and over the course of your membership, we will provide you with the opportunity to meet, interact and collaborate on a regular basis with the best of your peers from across the country and around the world. You will receive full reimbursement for the travel and accommodation expenses arising from your participation in Program meetings, as per our reimbursement policy.

As a CIFAR Associate, we expect that you will:

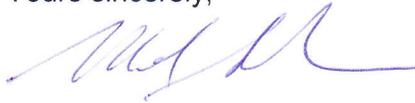
- attend meetings of the Quantum Materials Program,
- where appropriate, interact and collaborate with your fellow Program members on research areas of interest to the Program,
- acknowledge your status as a CIFAR Associate in any publications directly influenced by your involvement in the Program or that have resulted from collaborations with other members, and
- respond to occasional requests by CIFAR staff to provide updated information for your member profile and/or feedback regarding the Program and its impacts on your work.

CIFAR is also involved in a range of other exciting research areas. I enclose, by way of general background, a brief overview of the Institute, the research Programs in which it is already engaged, and some areas that it is currently exploring for possible further development. I also enclose a list of all the current CIFAR Quantum Materials Program members, as well as a list of all CIFAR members, organized by institution. We will keep you regularly updated on the progress of the Institute, ensure that you are invited to key events, and provide opportunities to recognize your achievements.

Your key contacts at CIFAR are myself and Elizabeth Gerrits, Director, Programs and Research Services.

Again, I am pleased that you have accepted this appointment, and look forward to hearing of your work related to the Quantum Materials Program.

Yours sincerely,



Mel Silverman
Vice President Research

cc: L. Taillefer, Program Director
C. Hošek, President CIFAR
E. Gerrits, Director Research Services, CIFAR

Enclosures



CIFAR Program Member Annual Report

Status: Final

Logout

Print

First name	Cedomir
Last name	Petrovic
E-mail address	petrovic@bnl.gov
Country where you normally live and work	US
Province	Other
Program	Quantum Materials Program

In answering the following questions, please note that 2009/2010 refers to July 1, 2009 to June 30, 2010.

Please do not use your browser's back-button while in this website. It may create duplicate records.

Research Highlights & Collaborations

- Describe *in layman's terms* your most important research achievement from 2009/2010. Discuss how this work ties in with your program's overall goals/themes, and highlight any CIFAR collaborations that were involved. Also mention any key publications or other significant outcomes resulting from this work.**

(Please Note: In answering this question, imagine you are explaining your achievement to CIFAR's public and private sector donors. We need a level of description that can be understood by individuals who are intellectually curious, successful and keen to understand your work – but haven't studied in your research area and don't know the jargon. Please explain any terminology as clearly as possible.)

Synthesis and characterization of iron chalcogenide superconductor crystals FeTe_{1-x}S_x, FeSe.

Please provide a visual image (with brief caption in layman's terms) related to the above highlight that could be reproduced in CIFAR reports, presentations, or on our website.

Attached Image

Provide Caption

- Mention any interactions or collaborations with CIFAR program members - in your own program or in another - or program meeting guests that were beneficial to you during the past year (a sentence or two about each). Also note any specific projects that emerged directly as a consequence of your CIFAR involvement. (You don't need to repeat examples that you may have already given in Question 1.)**

1. Louis Taillefer, Sherbrooke. Investigation of the structure of superconducting gap. More work is under way to



Last Saved: 07/12/2011 07:56 AM

Status: Final

Logout Print

First name	Cedomir
Last name	Petrovic
E-mail address	petrovic@bnl.gov
Country where you normally live and work	US
Province	Other
Program	Quantum Materials

Notes:

- **2010/2011 refers to July 1, 2010 to June 30, 2011.**
- **Use the *Preview/Save, Edit, or Submit* buttons, instead of your browser's 'back button', to avoid creating duplicate reports.**

Your Research Highlights and Collaborations in 2010/2011

1. Using **layman's terms**, tell us the story of your most important research achievement. Please:

- Highlight any contributing CIFAR collaborations or interactions.
- Help us understand both the research itself *and* why it matters.
- Provide the citations of any resulting publications.

We have raised superconducting Tc in charge density wave superconductor ZrTe₃ by Cu and Ni intercalation [Phys. Rev. Lett. 106, 246404 (2011), Europhys. Lett. 95, 17011 (2011)]. Moreover, superconductivity is now bulk, as opposed to fractional. ZrTe₃ could be used to investigate the proposed quantum criticality in quasi two dimensional conducting states related to fluctuations of charge density wave order [Phys. Rev. Lett. 100, 106402 (2008), Phys. Rev. B 78, 085124 (2008)].

We have made considerable progress in synthesis and characterization of iron selenide and potassium iron selenide superconductors. Synchrotron clean single crystals of elusive beta-FeSe have been synthesized [Phys. Rev. B 83, 224502 (2011)], structural and physical properties of KxFe₂-ySe₂-zSz single crystal alloys have been thoroughly investigated [Phys. Rev. B 83, 184504 (2011), Phys. Rev. B 83, 180503 (2011), Phys. Rev. B 83, 174503 (2011), Phys. Rev. B 83, 104508 (2011)]. The last paper was a collaboration within CIFAR and was selected as an Editor's choice.

Finally, in collaboration with CIFAR colleagues we have studied the symmetry of the superconducting gap in CeIn₅ (showing that it is inconsistent with isostructural CeCoIn₅) [Phys. Rev. B 82, 184531 (2010)] and we have examined magnetic order in the field induced phase in CeCoIn₅ near H_{c2}, showing that there are profound differences when the field is applied out of the basal plane of this material [Phys. Rev. Lett. 105, 187001 (2010)].

If possible, provide a related **high-resolution visual image and brief caption** (in layman's terms) that may be used in CIFAR's reports, presentations, or website.

Attached Image**Provide Caption**

2. Tell us about any **interactions or collaborations** with CIFAR program members or meeting guests that were especially influential to you. Please tell us about any resulting new projects that have emerged.

1. Louis Taillefer, Sherbrooke. Low temperature investigation of the material at the quantum critical point by thermal transport.
 2. Takashi Imai, McMaster. NMR studies of iron based superconductors.
 3. John Wei, Toronto. Point contact spectroscopy of iron based superconductors. Scanning tunneling microscopy and spectroscopy of charge density wave superconductors.
- Other Canadian collaborations:
4. Zahra Yamani, Chalk River: neutron studies of iron based superconductors
 5. Jess Brewer (UBC): muon studies of heavy fermion compounds

3. Did you attend any **meetings of other CIFAR programs**?

- Which ones?
- What motivated you?
- How did the experience influence you?

No.

4. Please help us evaluate progress on our goal to support, celebrate and build capacity in gifted **early-career researchers**.

(a) Did any of your postdocs and graduate students benefit from CIFAR? In what way?

Yes, postdoc Hechang Lei and student Hyejin Ryu attended CIFAR summer schools in 2010 and 2011 respectively.

(b) **Junior Fellows:** In terms of your research, thinking, and career development:

- What does participating in a CIFAR Research Program mean to you?
- What does participating in the Junior Fellow Academy mean to you?



**Quantum Materials Program
25th Year External Review**

May 18-20, 2012

Volume 1: Report of the Review Panel

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APPENDIX 1: Members of the Quantum Materials Program



Alberta

Frank Marsiglio, Associate

University of Alberta

British Columbia

Ian Affleck ^[1], Fellow

University of British Columbia

Jean-Sebastien Bernier, Junior Fellow

University of British Columbia

Doug Bonn, Fellow

University of British Columbia

Andrea Damascelli, Fellow

University of British Columbia

Steve Dodge, Scholar

Simon Fraser University

Joshua Folk ^[2], Scholar

University of British Columbia

Marcel Franz, Fellow

University of British Columbia

Walter N. Hardy, Fellow

University of British Columbia

Robert F. Kiefl, Associate

University of British Columbia

Ruixing Liang, Fellow

University of British Columbia

Kirk W. Madison, Scholar

University of British Columbia

George A. Sawatzky, Fellow

University of British Columbia

Jeff E. Sonier, Fellow

Simon Fraser University

Philip C. E. Stamp ^[3], Associate

University of British Columbia

Fei Zhou, Scholar

University of British Columbia

Ontario

John Berlinsky, Associate

McMaster University

William J. L. Buyers, Fellow

National Research Council of Canada

Jules P. Carbotte, Fellow

McMaster University

& Founding Program Director

Bruce D. Gaulin, Fellow

McMaster University

Michel J. P. Gingras, Fellow

University of Waterloo

Takashi Imai, Fellow

McMaster University

Stephen R. Julian, Fellow

University of Toronto

Catherine Kallin, Fellow

McMaster University

Hae-Young Kee, Fellow

University of Toronto

Yong Baek Kim, Fellow

University of Toronto

Graeme Luke, Fellow

McMaster University

Arun Paramekanti, Scholar

University of Toronto

John S. Preston, Associate

McMaster University

Joseph H. Thywissen, Scholar

University of Toronto

Thomas Timusk, Fellow

McMaster University

John Y. T. Wei, Associate

University of Toronto

Quebec

Alexandre Blais ^[4], Scholar
Claude Bourbonnais, Fellow
Patrick Fournier, Scholar
Guillaume Gervais ^[5], Scholar
Elena Hassinger, Junior Fellow
Louis Taillefer, Fellow & Program Director
André-Marie Tremblay, Fellow

Université de Sherbrooke
Université de Sherbrooke
Université de Sherbrooke
McGill University
Université de Sherbrooke
Université de Sherbrooke
Université de Sherbrooke

International

Philip Anderson, Associate
Immanuel F. Bloch, Associate

Princeton University, USA
Max-Planck-Institut für Quantenoptik,
Germany

Collin Broholm, Associate
Eugene A. Demler, Associate
Ian Fisher, Associate
Zachary Fisk, Associate
Randall G. Hulet, Associate
Harold Y. Hwang, Associate
Denis Jérôme, Associate
Deborah Jin, Associate
Steven Kivelson, Associate
Gabriel Kotliar, Associate
Karyn Le Hur, Associate
Gilbert Lonzarich, Associate

The Johns Hopkins University, USA
Harvard University, USA
Stanford University, USA
University of California at Irvine, USA
Rice University, USA
Stanford University, USA
Université Paris-Sud, France
University of Colorado, USA
Stanford University, USA
Rutgers University, USA
Center for Theoretical Physics, France
University of Cambridge, United
Kingdom

Andrew Mackenzie, Associate

University of St. Andrews, United
Kingdom

Yoshiteru Maeno, Associate
Andrew Millis, Associate
Kathryn A. Moler, Associate
Cedomir Petrovic, Associate
Cyril Proust, Associate

Kyoto University, Japan
Columbia University, USA
Stanford University, USA
Brookhaven National Laboratory, USA
Laboratoire National des Champs
Magnétiques Pulsés, France

T. Maurice Rice, Associate
Subir Sachdev, Associate
Douglas Scalapino, Associate

ETH Zürich, Switzerland
Harvard University, USA
University of California at Santa
Barbara, USA

Senthil Todadri, Associate

Massachusetts Institute of
Technology, USA

Hai-Hu Wen, Associate

Chinese Academy of Sciences, China

^[1] cross-appointed to CIFAR's *Nanoelectronics* and *Quantum Materials* programs

^[2] cross-appointed to CIFAR's *Nanoelectronics* and *Quantum Materials* programs

^[3] cross-appointed to CIFAR's *Nanoelectronics* and *Quantum Materials* programs

^[4] cross-appointed to CIFAR's *Nanoelectronics*, *Quantum Information Processing* and *Quantum Materials* programs

^[5] cross-appointed to CIFAR's *Nanoelectronics* and *Quantum Materials* programs

Advisory Committee Members

Richard L. Greene (Chair)

Department of Physics
University of Maryland, USA

J.C. Séamus Davis

Department of Physics
Cornell University, USA

Tin-Lun (Jason) Ho

Department of Physics
Ohio State University, USA

Allan H. MacDonald

Department of Physics
University of Texas at Austin, USA

Jochen Mannhart

Max Planck Institute for Solid State Research
Germany

Hidenori Takagi

Magnetic Materials Laboratory
RIKEN, Japan

APPENDIX 2: Members of the Quantum Materials Program Review Panel



George W. Crabtree (Chair)

Senior Scientist and
Argonne Distinguished Fellow
Materials Science Division
Argonne National Laboratory
USA

Leon Balents

Professor of Physics
Kavli Institute for Theoretical Physics
University of California, Santa Barbara
USA

Andrey Chubukov

Department of Physics
University of Wisconsin at Madison
USA

Antoine Georges

Centre de Physique Théorique (CPHT)
École Polytechnique
France

Joël Mesot

Director
Paul Scherrer Institute
Switzerland

Jean-Marc Triscone

Département de physique de la matière condensée
University of Geneva
Switzerland

W. John McDonald

(CIFAR Research Council Representative)
Professor Emeritus
Department of Physics
University of Alberta

Cover Page

Replace with Lana's Final Cover (Keep Table)

Project Title	Center for Computational Design of Functional Strongly Correlated Materials and Theoretical Spectroscopy
Lead Applicant/Institution	Brookhaven National Laboratory
Street Address/City/State/Zip	Condensed Matter Physics and Materials Science Department/Brookhaven Avenue Upton, New York 11973
Postal Address	P.O. Box 5000 Mail Stop: 734 Upton, NY 11973
Project Director Name, Telephone Number, email	Gabriel Kotliar Phone: 848-445-9036 Email: Kotliar@physics.rutgers.edu
Administrative Point of Contact name, telephone number, email	Alison Schwarz, Phone: (631) 344-3428 Email: aschwarz@bnl.gov
FOA Number	DE-FOA-0001276
DOE/Office of Science Program Office Technical Contact	Basic Energy Sciences/Dr. James Davenport
PAMS/LOI Tracking Number	LOI-0000011214

3.3 Roles/Responsibilities of Senior/Key Personnel [2.d.(1)]

Role: Director Gabi Kotliar has a two month/year appointment at Brookhaven National Lab, all of which will be devoted to running this project. He will also **???** days of his time from his Rutgers appointment. He has experience in managing coding projects: he recently lead a DOE CMSN team which developed various new codes, some of which form the basis of the proposal at hand. G. Kotliar will be in direct charge of writing the GW+DMFT portion of DMFT-MatDeLab in subtask 4 (with Postdoc 2). He will also supervise the two software engineers who will be developing the software interface (subtask 1) as well as Postdoc 6 (who is tasked with developing the materials database) and Postdoc 10 (who is tasked with doing theoretical spectroscopy for the users of NSLS-II beamlines).

All BNL and LANL PIs will be supported at 5% of their time. K. Haule will be supported with 1 month summer salary. Y. Yao will be supported at 75% of his time. Nick D’Imperio who will ensure the codes run on HPCs will devote 50% of his time to this project.

The PIs have the following roles in this project:

Table X. Roles/Responsibilities of Senior/Key Personnel.

Principal Investigator (PI) Role	Responsibility
PI K. Haule	To develop the LDA+DMFT portion of DMFT-MatDeLab (subtask 2) in conjunction with Postdoc I.
PI Y. Yao	To develop the LDA+RISB/G portion of DMFT-MatDeLab (subtask 3).
PI R. Harrison	To ensure the portability of the software to future HPC platforms (with the aid of N. D’Imperio) and to oversee a demonstration project of DSL in the form of code implementing the computation of phonons within GW in conjunction with Postdocs 3 and 4.
PI C. Batista	To develop DMFT infused tight-binding quantum molecular dynamics (subtask 6).
PIs A. Tselik / R. Konik	To aid in the development of the DMFT Landau-Ginsburg theories (subtask 7) in conjunction with Postdoc 5.
PIs E. Bozin/ S. Billinge	To perform x-ray and neutron scattering necessary for subtasks 8, 9, and 10 in conjunction with Postdoc 7.
PI P. Johnson	To perform ARPES measurements necessary for subtasks 8, 9, and 10 in conjunction with Postdoc 8.
PI M. Dean	To perform RIXS measurements necessary for subtasks 8, 9, and 10 in conjunction with Postdoc 9.
PIs M. Aronson/ C. Petrovic	To perform crystal growth and characterization necessary for subtasks 8 and 10 in conjunction with Postdoc 11 and a graduate student.
PI Q. Li	To perform transport measurements for subtasks 8 and 10 in conjunction with Postdoc 12.
PI M. Greenblatt	To perform crystal growth for subtask 10 in conjunction with Postdoc 13.

3.4 Management Process [2.d.(2)]

GK: this part will be mainly done by Robert. But here are some thoughts.

登録原票記載事項証明書

2枚の内の1枚目

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世帯主との続柄	本人		
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上陸した年月日	2008年 4月 4日	在留の資格	教授
在留期間	2008年 4月 4日から2009年 4月 4日まで		
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備考	上記の登録証明書番号の外国人登録証明書は、交付予定です。		
	以下余白		

上記の者は、外国人登録法の規定により登録済であり、上記のとおり外国人登録原票に記載されていることを証明する。

平成20年(2008年) 4月 9日

千葉県柏市長 本多 晃

