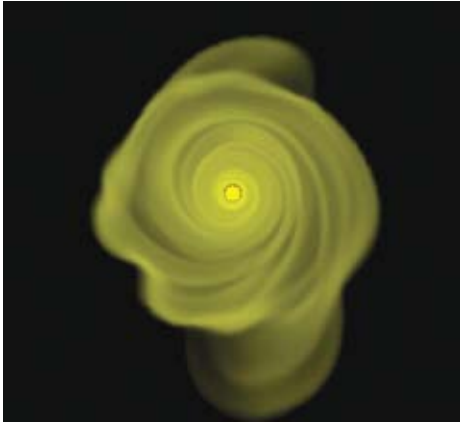


Theoretical Astrophysics

We perform theoretical and numerical studies of turbulence in the interstellar medium, gravitational fragmentation and collapse, disk evolution, celestial mechanics of solar system bodies and extrasolar planets.



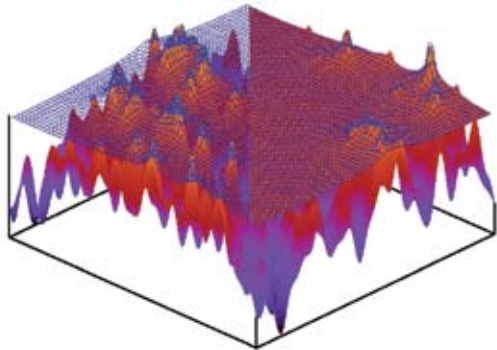
There are active collaborations with various national and international research groups. Ties are maintained with the Canadian Institute for Theoretical Astrophysics. Theoretical work also ties in closely with experimental work being done in the astronomy and planetary science groups.

Application Procedures

Applications may be made at any time during the academic year. The department responds to complete applications promptly; notifications being issued at any time during the year.

An absolute minimum grade average of a B+ (78%), calculated on courses taken in the last two years, is required for admission to our graduate programs. However, please note that most successful applicants have averages above 85%. Students indicate on their application which research group they wish to join (see research topics on reverse). Students interested in Biological, Materials, & Soft Matter Physics and Elementary Particles, Field Theory & Gravitation should apply through the Applied Math Department while those interested in Theoretical Astrophysics and Solid State Physics should apply through the Department of Physics and Astronomy. Faculty are cross-appointed in both departments so it is also possible to apply through either department as long as you specifically mention the faculty member you are interested in working with on your application.

For complete, up-to-date information, please visit our website at www.apmaths.uwo.ca/theorphysics.shtml.



Financial Support

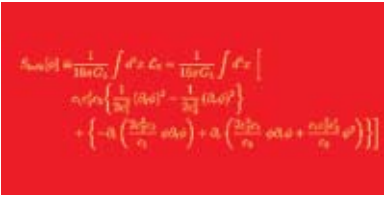
All successful applicants receive a guaranteed minimum level of financial support sufficient to cover tuition fees and living expenses in London. Specific amounts are listed on our website at www.apmaths.uwo.ca/gradprogram.shtml. International students are given additional support to compensate for higher tuition fees. Significantly higher levels of support are also available for students holding external scholarships, such as NSERC and OGS awards, and exceptional international students (e.g. in 2007 NSERC award holders will receive \$15,000 in addition to their NSERC award). It is also worth noting that the cost of living is relatively low in London. Based on www.homefair.com comparison, if you are offered a funding package of \$24,000 from Western, you would need to be offered a funding package of \$38,180 from a university located in Toronto and \$36,164 from a university located in Vancouver to have the same standard of living. Inquiries regarding financial assistance should be directed to the Graduate Secretary (akager@uwo.ca), Department of Applied Mathematics.

Contact Us:

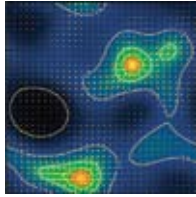
PhD Program in Theoretical Physics
 Department of Applied Mathematics
 Middlesex College Room 255
 The University of Western Ontario
 1151 Richmond Street, North
 London, Ontario Canada N6A 5B7
 Phone: (519) 661-3649
 Fax: (519) 661-3523
 Email: akager@uwo.ca
 Web: www.apmaths.uwo.ca/theorphysics.shtml
www.apmaths.uwo.ca/theorphysics.shtml



Graduate Studies in Theoretical Physics



Western's award winning faculty members, cutting edge research and interdisciplinary environment give you the tools to engage your imagination.

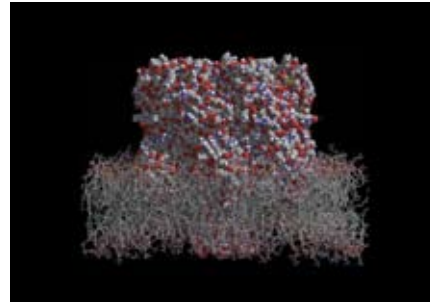


The University of Western Ontario

Why Western?



Biological, Materials and Soft Matter Physics



Computational physics is characterized by one common working philosophy: compute the large from knowing the small. When modeling a system, we teach our computer codes the rules for the interaction between small units. Such elementary units can range from electrons and nuclei to finite, coarse-grained elements containing billions of atoms. Accordingly, the rules for interaction between such units range from Coulomb's law and the Schrodinger equation to Hooke's Law and other macroscopic relations. Once a model is programmed, we let the computers predict the aggregate behavior of all units. Ongoing research topics at Western include micro/nano-fluidic devices, colloidal systems, nano-tribology, quantum chemistry, liquid crystals, lipid diffusion, membrane proteins, and translocation of DNA.

Many advances in physics have served to demonstrate how ideas or methods drawn from different subfields of physics can come together and provide fresh impetus. Notable examples are the use of quantum field theory techniques in condensed matter physics, and the role of astrophysical and cosmological information in elementary particle physics.

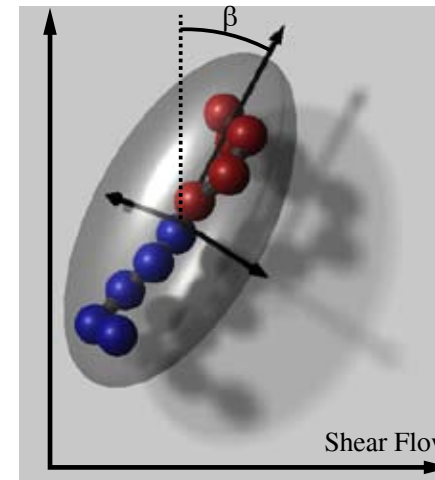
The Theoretical Physics Program at Western is designed to provide graduate students with a broad background in the various subfields of theoretical physics that are actively pursued at Western, including biological and soft matter physics, solid state physics, elementary particles, field theory, gravitation, and astrophysics. The Program actively encourages interaction and interdisciplinary collaboration among our 12 faculty and graduate students from all branches of theoretical physics research.

Candidates in the Theoretical Physics Ph.D. Program will be registered in either the Department of Physics and Astronomy www.physics.uwo.ca or the Department of Applied Mathematics www.apmaths.uwo.ca. The Program has distinct academic requirements www.apmaths.uwo.ca/theorphysics.shtml?requirements directed towards the training of theoretical physicists and also fulfills the respective requirements of the department in which the degree candidate is registered.

Physics Department students completing the program will receive a Ph.D. degree in **Physics**. Applied Mathematics Department students completing the program will receive a Ph.D. degree in **Applied Mathematics** with the words **Theoretical Physics** included in parentheses on their diplomas.

Solid State Physics

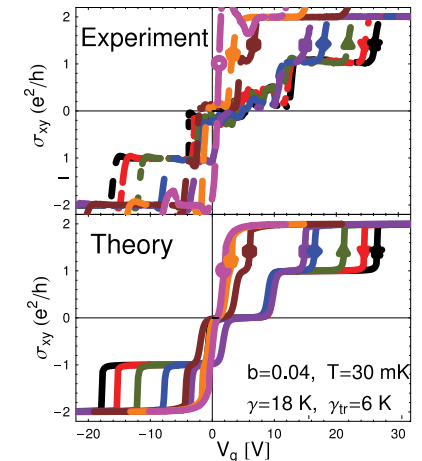
We perform theoretical studies and numerical simulations of the quantum properties of solids, both as bulk materials and as constituents of engineered materials, where surface and interface effects are important. In some cases these activities parallel those being investigated by our experimental group.



Our theoretical work focuses on the dynamic and transport properties of solids (including metals, semiconductors, amorphous and biological materials) as characterized by their optical, magnetic, vibrational, electronic and electromagnetic behaviour.

Elementary Particles, Field Theory & Gravitation

Our research group is active in a wide number of areas in elementary particle physics, addressing research topics ranging from the phenomenology of elementary particle interactions, investigations within quantum field theory, and the dynamical breakdown of quantum field theoretical symmetries, to the quantization of gravity, string/brane models underlying known-interaction physics, and the unification of fundamental interactions of nature. Our group has strong ties with other research institutes, including Affiliate and Associate Member linkages with the Perimeter Institute for Theoretical Physics in nearby Waterloo, Ontario, as well as an institutional linkage with The Bogolyubov Institute for Theoretical Physics in Kiev, Ukraine.



Relativistic-like dynamics in quantum Hall effect in graphene Phys. Rev. B **74**, 195429 (2006).