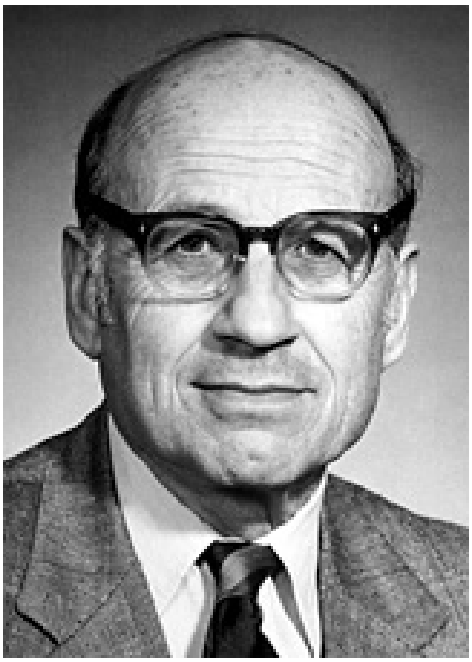
NOBELIST WALTER KOHN TO SPEAK OCTOBER 19 & 20 AT UMD



- **Prange Prize Lecture**
  October 19, 2010
  1412 Physics Building
  4:00PM

- **CMTC Distinguished Lecture**
  October 20, 2010
  1201 Physics Building
  12:30PM

Nobel laureate Walter Kohn, who invented the density-functional theory of matter, has been named the 2010 recipient of the Richard E. Prange Prize and Lectureship in Condensed Matter Theory and Related Areas. Kohn's Prange lecture, titled "A World Powered Predominantly by Solar and Wind Energy," will be delivered at the University of Maryland's John S. Toll Physics Building at 4:00PM on Oct. 19 in the Physics Lecture Hall, Room 1412. The event is open to the public.

Kohn's work on the density-functional theory has had transformative impact on physics, chemistry, engineering, and medicine.

Additionally, Dr. Kohn will give a technical talk "Nearsightedness and Linear Scaling of Electronic Matter—a Closer Look" at 12:30PM Wednesday, Oct. 20 in Physics Room 1201.

The Prange Prize, established by the UMD Department of Physics and the Condensed Matter Theory Center, honors the late Professor Richard Prange, whose distinguished career at Maryland spanned four decades (1961 - 2000).

For further information, please visit: www.umdphysics.umd.edu

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"Nearsightedness and Linear Scaling of Electronic Matter - a Closer Look"

W. Kohn

The concept of "nearsightedness of electronic matter (NEM)" was introduced by the speaker in 1996. It is, loosely speaking, the fact that the electronic properties at a reference point r_0 are not significantly affected by a potential perturbation, w(r'), unless the "footprint" of w(r') comes sufficiently close to r_0. Important chemical properties like the transferability of bond energies between different environments can be quantitatively estimated, using NEM, provided long-range Coulomb interactions between electrons are ignored (as in the early Sommerfeld theory).

In this seminar, the speaker will present an examination of the question of the persistence of NEM, even in the presence of the actual, *long-range,* Coulomb interactions between electrons. In addition, implications of long-range interactions between electrons for linear scaling of computations involving N atoms, where N >>1, will be discussed.