

Spring 2010



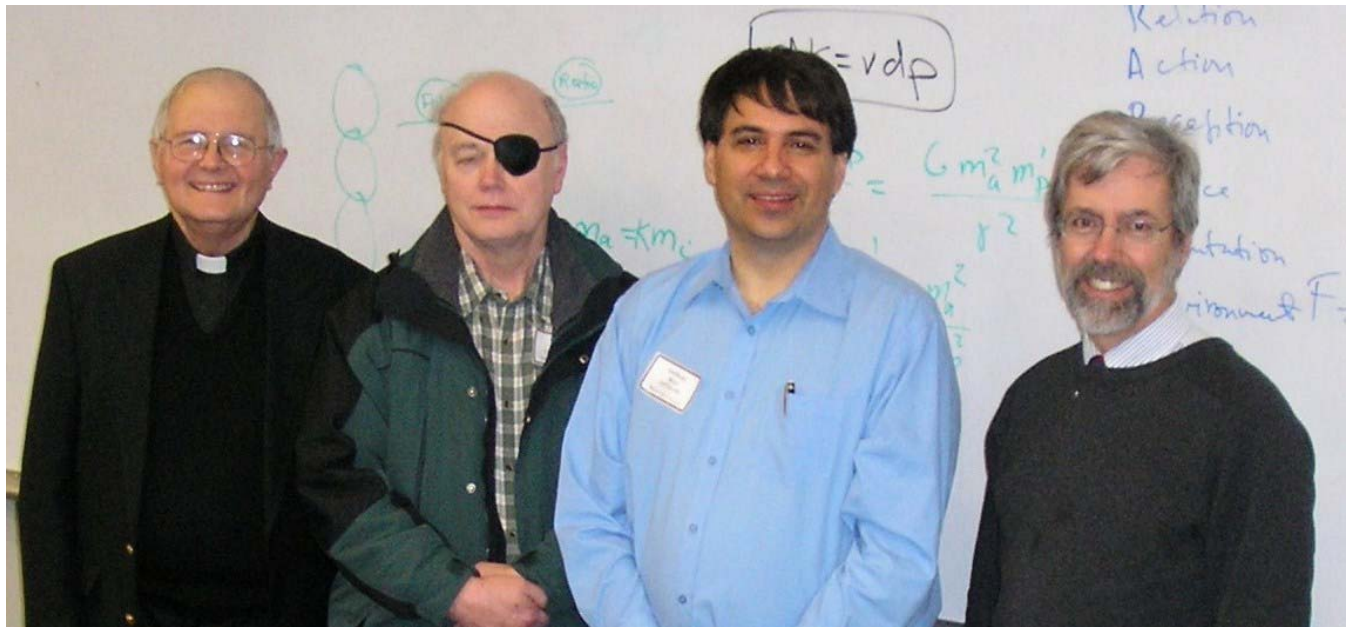
THE INSTITUTE FOR ADVANCED PHYSICS

The Institute News

by J. Clifton Hill, PhD, C.S.Sp.

- Teachers Conference at Wofford College
- Dr. Daw presents PFR at several Georgia and South Carolina Universities
- Dr. Rizzi speaks at Clemson University
- IAP welcomes a new associate member
- Dominican students study *The Science Before Science*

Teachers Conference at Wofford College



IAP Staff at Wofford College Conference. *From left to right:* Fr. Clifton Hill, PhD, Dr. Dan Welch, Dr. Anthony Rizzi and Dr. Murray Daw.

Several IAP faculty members travelled to Spartanburg, South Carolina for a conference on the text book *Physics for Realists: Mechanics* on Saturday, February 27, hosted by the **Physics Department of Wofford College**. Participants came from the Wofford Physics Department, from schools and colleges in the area and from as far away as Houston, Texas.

Dr. Anthony Rizzi, IAP Director, presented the details of the chapters. **Dr. Murray Daw** and **Fr. Clifton Hill**, both IAP faculty, and **Dr. Dan Welch**, IAP certified member and chairman of the Wofford Physics Department, were involved in the breakout sessions, leading sessions, answering questions and providing sounding boards for participants.

Beginning with a presentation of the first chapter of the text, Dr. Rizzi brought out the primary role of impetus, taking the group up to a profound understanding of kinetic energy. The format followed was similar to that used at last year's conference at St. Joseph's University in Philadelphia. After the presentation of each chapter, time was allotted for participants' questions and comments.

The participants split into two groups for workshop sessions, where there was some teacher/student role playing and further discussion. One could see the participants' understanding grow.

After unique fundamental presentations on angular momentum and gravity, there was another workshop session, this time for working some end-of-the-chapter problems from the textbook.

The groups returned to hear the unifying practical theme, i.e. how to make a manned trip to Mars. In the previous sessions, Dr. Rizzi developed the tools to plan such a trip. In this session, he brought them all together and gave significant details so that professors can lead their students to see the profound nature of their studies in physics. The details of the calendar for Mars and the related astronomy were discussed.



For information on obtaining *Physics for Realists* and its *Solutions Manual*, go to iapweb.org/store/

The final chapter was a tour de force in that it used the text's unique principled approach to make sense of the surprising results encountered in special relativity. This latter is nothing short of revolutionary. The participants enjoyed the entire event.



Thanks

Our gratitude to Associate Member **James Louviere** for donating audio CDs and DVDs featuring Dr. Rizzi's talks on IAP's mission and lectures on first principles.

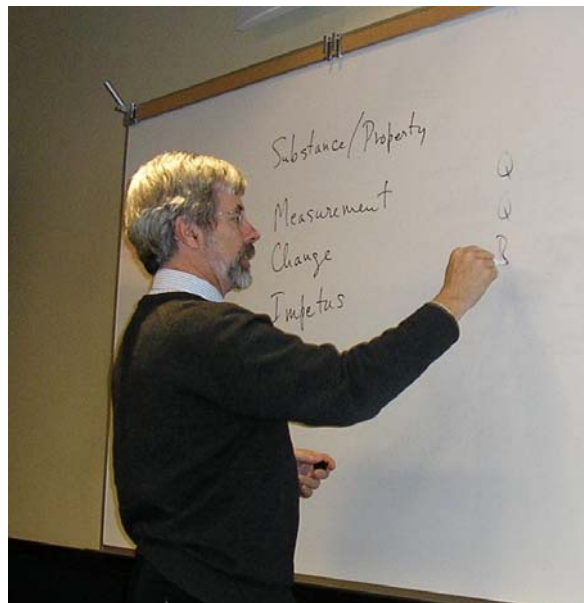
The Institute is also grateful to Associate Member **David Giroir** for purchasing, staining and finishing much-needed chairs for IAP offices and to the "Unfinished Furniture Warehouse" for their discount.

Dr. Daw presents at North Georgia, Furman and Wofford

Having given presentations on the textbook *Physics for Realists: Mechanics* at **Auburn University** and the **College of Charleston** in October of last year (see Newsletter, Fall 2009), **Dr. Murray Daw**, IAP Adjunct Professor and Bowen Professor of Physics at **Clemson University**, gave talks on the text at **North Georgia College and State University** in Dahlonega, Georgia on November 5, 2009, and at **Furman University** in Greenville, South Carolina on November 12.

On November 13 Dr. Daw presented the text to faculty and students at **Wofford College** in Spartanburg, South Carolina, the site of the IAP *Physics for Realists* Teachers Conference this past February 27.

The text is unique in that it starts with simple observations and analysis of the world around us, making physics much more accessible to students.



This approach brings out first principles, which leads to a better understanding of mechanics and ultimately of all of physics.

Dr. Rizzi Presents at Clemson University

On February 25, **Dr. Anthony Rizzi**, Director of IAP, presented a colloquium “A Foundational Approach to Mechanics” to the physics department at **Clemson University** in Clemson, SC. Dr. Rizzi emphasized the importance of principled understanding both in teaching physics and in the practice of physics. His talk focused on a foundational approach to mechanics, the first subject of modern physics and the first that the beginning student encounters. Newtonian mechanics is the area in which the powerful mathematical methods were first applied to the study of the physical world.

Dr Rizzi emphasized that physics starts with basic facts that all know. Physics is the study of changeable things that we see, hear, touch, and feel all around us. When, for example, a baseball moves from one place to another, students instinctively look for the cause of the motion. Instead of answering this question, a conventional physics course gives the students equations. Students frequently and incorrectly come to see the equations as a sort of magician’s trick. Plug in the numbers and the right answer comes out! Dr. Rizzi points out that physics learned in this way is more like an apprenticeship for learning skills than a quest for true understanding.

The difference between the principled approach and the way physics is presently understood, taught and practiced generated a lively and productive discussion between Dr Rizzi and scientists in the audience.

IAP Welcomes New Associate Member Don Caffery

Donelson R. St. John Caffery, P.E., is a mechanical engineer with the Louisiana Department of Environmental Quality. Don graduated from L.S.U. in 1981 with a BS in mechanical engineering. Don says he is honored to be a member of IAP.

Don and his wife, Jo Lynn, have been married for 27 years and have two children, Ralph (25) and Mary (16). Don enjoys writing for Catholic children in his spare time, but presently is working on his most important book--to paraphrase Dr. Peter Kreeft-- the one he isn't *writing*, i.e., helping Mary get through those teenage years.

In his own words, Don greatly enjoys being a part of the effort to reunite Faith and Reason, by grounding our thinking in the simple sensorial facts present all around us and known even to small children.



Dominicans Complete Study of *The Science Before Science*

At the Dominican House of Studies in Washington, DC, a group of 8 men studying for the priesthood in the Dominican order completed a study in which they read and discussed and worked through *The Science Before Science: A Guide To Thinking in the 21st Century*. Dr. Rizzi led one of the group sessions. These Dominican brothers hope to study *Physics for Realists: Mechanics* next. The students of varying backgrounds from law to physics are enthusiastic about the approach that *SBS* takes in understanding our world starting with those simple things given to us through the senses and in explaining the proper place of modern science in our thinking and doing.

*The Institute for Advanced Physics presents its
8th annual conference*

Physics for Realists VII
Modern Physics with a Common Sense Grounding
Vol. II Electricity and Magnetism

A conference by invitation only for IAP members

Wednesday, July 21 to Saturday, July 24, 2010
The University of Notre Dame, South Bend, IN