



# THE INSTITUTE FOR ADVANCED PHYSICS

# The Institute News

- Murray Daw at Sandia and Los Alamos National Labs
- IAP welcomes four new members: Alan Wright Certified Member and Associate Members Frank Camacho, J. Kevin Hix, M.D., and Paul Andrews
- IAP's new DVD series
- Associate Member DiCarlo elected Belton High School teacher of the year

## Murray Daw at Sandia and Los Alamos National Labs

This summer, IAP faculty Dr. Murray Daw presented two talks on *Physics for Realists* (PFR) to scientific and engineering audiences at two (DOE) National Labs in New Mexico.

The first was a colloquium hosted by and for theoretical physicists at **Los Alamos National Labs**. The presentation concentrated on the proper understanding of physics, and its pedagogical expression in the PFR-based introductory physics with calculus class at Clemson. There were enthusiastic questions from the audience. One person in the audience, **Dr. Mike Baskes**, when he was a student at his alma mater (B.S. and Ph.D.), the California Institute of Technology (CalTech), went through the famous introductory physics class taught by **Richard Feynman**. Baskes' reaction to PFR was this:

*"Feynman taught us that understanding should always be first. That being able to calculate was only a part of understanding, and a relatively small part at that. I think this (Physics for Realists) is exactly the right way to do it, and I think Feynman would have thought so, too."*

The second presentation was to a group of engineers and physicists at **Sandia National Labs** in Albuquerque. This presentation emphasized the necessity for us as rational animals to have a full, generic understanding of physics, and that, in any organization, a generic understanding is necessary for any member of that organization, including (and especially) its leaders.

Dr. Daw is still engaged in continuing discussions with members from both audiences, several months after the presentation.



## Alan F. Wright, New Certified Member



**Alan Wright** received a B. S. degree in Physics from New Mexico State University in 1986 and a Ph. D. in Physics from the University of California, Davis in 1991. Following his Ph. D, Alan was a post-doctoral

research associate at Sandia National Laboratories (SNL), California from 1991 to 1993 and at SNL, New Mexico from 1993 to 1995. Since 1995 he has been a Member of the Technical Staff in the Physical, Chemical and Nano Sciences Center at SNL, New Mexico.

Alan is an author or co-author on more than 70 publications, has given more than 25 invited presentations, and received a Lockheed-Martin award for excellence in research. He has also co-organized two Materials Research Society symposia and co-organized the International Conference on Defects in Semiconductors in 2007. His research at SNL has focused on theoretical studies of point defects in elemental and binary semiconductors using density-functional theory, including their energy levels and their diffusion mechanisms. This work has recently been extended to point defects in binary III-V alloys.

Alan became a certified member of the Institute for Advanced Physics in June of 2014. Alan is excited to be a part of grounding our thinking firmly in the first physics.

## Frank Camacho, New Associate Member Level II



**Frank Camacho** is a graduate of the Massachusetts Institute of Technology in Cambridge, MA, obtaining a B.S. degree in 1982 and a Masters in 1985, both electrical engineering. Frank was born and raised in Los Angeles, CA. Since 1987, he has worked in

various capacities doing research as an engineer/physicist at the Lawrence Livermore National Laboratory (Livermore, CA), Sandia National Laboratories (Albuquerque, NM), and the Air Force Research Laboratory (Albuquerque, NM) as a contract employee with NumerEx, LLC, his current position. His work experience has been primarily in the fields of plasma physics (mostly in the context of nuclear fusion research), lasers & optics, pulsed power, high-power microwave generation, and related topics.

In addition to his professional activities, Frank has been active in various parish ministries and

other spiritual pursuits over the years. Frank is fluent in Spanish, can get by in French, and has studied New Testament Greek.

*My study of "The Science Before Science" and participation in the IAP's Associate Membership course has given me new insights into the nature of science and has, in effect, prompted me to rebuild the foundation of my scientific education at the most basic levels. Perhaps more than anything else, it has taught me how crucial and necessary it is to have a full physics in order to properly understand modern science and practice it in a more complete way.*

*I see myself using the principles I have learned by making a conscious effort to apply them in my personal and professional life and by seeking opportunities to teach these principles to others, whether it be through formal instruction or informal contacts with friends and scientific colleagues.*

*As a result of my IAP education, my faith has been strengthened and deepened because I have come to appreciate the central role that a correct foundational understanding of our physical world (including our own physical nature) plays in establishing the preambles of faith and in our coming to know the Truth toward which we are ordered.*

## John Kevin Hix, M.D., New Associate Member Level II

**John Kevin Hix, M.D.**, earned his undergraduate degree in Psychology as a Natural Science at the University of Michigan and then earned his medical degree at The Ohio State University. He completed his residency training in internal medicine and a subsequent fellowship in nephrology at The Cleveland Clinic Foundation.



He was fortunate to have the opportunity to join the faculty practice at Rochester General Hospital in Rochester, New York. He has enjoyed the past decade there taking care of patients, educating medical school students and residents, and engaging in research

with a particular interest in electrolytes and wound healing. He is board certified in internal

medicine and nephrology and currently serves as the medical director for patient dialysis services at Rochester General Hospital as well as the director for its outpatient Baycreek unit.

Dr. Hix first learned about the Institute for Advanced Physics when he heard Dr. Rizzi discuss answers to some fundamental questions about physics on the "Catholic Answers" radio program. A conversation with Dr. Rizzi followed that revealed how critical it is to obtain a proper foundation of knowledge in physics in order to truly understand the meaning of modern advances in science and medicine. He completed the Associate Membership course on *The Science Before Science* with the help of IAP Faculty Dr. Murray Daw in his effort to properly incorporate the correct foundation of truth into his own research and teaching.

Kevin lives with his beautiful wife, Melissa, and their three wonderful children. He's happy and excited to be an IAP member.

## Paul Andrews, New Associate Member Level II

**Paul Andrews** is a veteran of the U.S. Navy where he worked on fire control radar systems and a graduate of



New Mexico State University in Las Cruces NM, with B.S. (1991) and M.S. (1994) degrees in Electrical Engineering with an emphasis in optics and analog circuit design. Since graduation his employment has primarily been involved with the design and support of integrated circuits for the consumer and industrial markets.

Paul currently lives in the Sandia Park, NM with his lovely wife Edwina, where he divides his time enjoying the great outdoors of the southwest, cycling, playing duplicate bridge, photography, and star gazing.

Paul has found the study of the *The Science before Science* to be an enlightening experience and found the ideas presented both obvious yet little understood. This study has exposed the necessity for a foundational understanding of how we know what we know so that we may more properly explore and discover the workings of the universe.

Purchase *A Kid's Introduction to Physics (and Beyond)* at <http://www.iapweb.org/store/kids.html>

## Anthony DiCarlo elected Belton HS Teacher of the Year

***Congratulations Anthony DiCarlo!!!*** In April, IAP Associate Member Anthony DiCarlo was elected Teacher of the Year by Belton-Honea Path High School, Belton, South Carolina.

Anthony is a graduate of Anderson University having earned a B.S. in mathematics secondary education. He has been teaching since 2010. In 2011, he became an Associate Member after more than a semester of study at The Institute for Advanced Physics. He points out that his involvement in IAP has helped him to truly embrace a life of learning and has been a pivotal influence on his teaching. He once remarked to Dr. Rizzi that he never realized how important math was until he learned through his studies at IAP that quantity is the first property of all physical things. With this new realization, he is inspiring and teaching his students who have



Anthony DiCarlo (*right*) with Dr. Rizzi (*left*) at the 2011 IAP conference at University of Notre Dame

gained a deep understanding and enjoyment in mathematics. Anthony says:

*Teaching is a very important profession because, as men, we are knowers; we are made to know and understand things, starting with the physical world that we see. Said differently, man is a rational animal. He is like other animals in that he has a body and the ability to have sense knowledge, but he is infinitely above the other animals because he has an intellect and a will. The intellect allows man to have general knowledge, which is abstracted from the data given through the senses. The role of the will is to choose, to make decisions. Before man can truly act or choose, though, he must first know.... [Teaching] is a great privilege, as well as a great responsibility. Democracy requires an intelligent citizenry; without citizens who can use their God-given ability to think and reason for themselves, a democracy cannot survive. And so, teachers help to preserve this country and all that we know and love when they fulfill their duties faithfully.*

The Institute for Advanced Physics presents its 12<sup>th</sup> annual conference

### **Physics for Realists XI**

**Modern Physics with a  
Common Sense Grounding  
Vol. IV Quantum Mechanics**  
A conference for IAP members

**July 30 – August 2, 2014  
Louisiana State University  
Baton Rouge, LA**

***Al Kresta in the Afternoon on Ave Maria Radio*** April 30, 2014 4:35pm Eastern and ***Catholic Answers Live*** radio May 2nd, 2014 7-8pm Eastern: ***Physics for First Communion***. Dr. Rizzi discussed IAP's new nine episode DVD series. Dr. Rizzi uses the principles in his *Kid's Introduction to Physics* book to prepare your children along with his six year old daughter to receive their first Holy Communion. The series teaches the meaning of first Communion itself, what the Eucharist is and what happens at Mass and during Communion. Children (and parents and teachers) will learn that family relations are built through focusing on these basic truths. The series unfolds as a charming discussion between a daddy and his daughter sitting in his lap. Listen online at:

***Kresta in the Afternoon***

[http://www.avemariaradio.net/audio\\_archive/kresta-in-the-afternoon-april-30-2014-hour-1/](http://www.avemariaradio.net/audio_archive/kresta-in-the-afternoon-april-30-2014-hour-1/)

***Catholic Answers Live***

<http://www.catholic.com/profiles/anthony-rizzi>





## *Physics for First Holy Communion*

**Armchair discussions that prepare you and your children or students for Holy Communion**  
*with*

*Dr. Anthony Rizzi and his six year old daughter*

A gift from the IAP when you support our work with a \$35 donation (plus s/h). 2 DVDs, 9 episodes, approx. 4 hours total  
[www.iapweb.org/store/kids.html#video](http://www.iapweb.org/store/kids.html#video)

*This material is soooo important. We really need to **bring back science** into the discussion to explain the Faith. The explanation of the host made so much sense, I thought, "wow, so that's what is actually happening." Making something **simple and good** like this is actually the hardest thing to accomplish. **Mr. Lluveras, Florida***

*[Dr. Rizzi] kept it simple, and it was perfect. Adults [should have been] taught these things as kids. For most of us out there, it really needs to be kept this simple. I want to listen to this again and again. I loved the examples of the bunny rabbit, the baseball, etc. The explanation concerning the substances and properties, wow! Now the [Eucharist] finally makes sense! **Mrs. Lluveras***

*I loved the interaction [between Dr. Rizzi and] his daughter, and I actually understood everything perfectly! It was amazing and fun! **Joseph***



Want to know the meaning of Fideism or Scientism? Do you have seven minutes to learn about the Christian symbolism in the Star Trek episode "The Empath"? EWTN's youtube programming has over ten discussions featuring Dr. Rizzi on *Faith Matters*. Dr. Rizzi handles each topic within 2 to 7 minutes. Here are just a few of the topics you can choose from:

**The Scientific Revolution Teaching Children  
Newtonian Physics and the Faith**

**St. Thomas Aquinas  
First Things First  
Theotokos & Science  
The Home of Science**

**Fideism  
Scientism  
Star Trek III  
Star Trek "The Empath"**

EWTN is posting new discussions each week. Find the programs at:  
[http://www.youtube.com/results?search\\_query=EWTN+Faith+Matters](http://www.youtube.com/results?search_query=EWTN+Faith+Matters)

Those who shop on AMAZON are encouraged to support IAP by shopping on **AMAZON SMILE** and designating the Institute for Advanced Physics as your charity. **AMAZON will donate 5% of your purchase price** to the Institute for Advanced Physics EACH TIME YOU SHOP on Amazon Smile AT NO COST TO YOU. **Your total cost will be the same whether you use AMAZON or AMAZON SMILE.** Every little bit helps!

# A Brief History of Nothing

by Anthony Rizzi

*As you know, IAP is tackling the core of our deep cultural problems, which is our science not being clearly grounded in the principles that every child knows. IAP is repairing the core of our culture by grounding its core thinking, modern science, in our knowledge of the physical things that we know directly through our senses. To give people insight into this deep need (which is currently only addressed by IAP), IAP magazine has been initiated.*

*In this article, Dr. Rizzi helps us see that our loss of the basic principles, except in a very confused way, deeply affects all of us through what we hold as scientia (knowledge), i.e. modern science. After all, what makes the modern world modern is modern science.*

Physicist Stephen Hawking has recently said in his book "The Grand Design" and in interviews related to that book that the universe could come from nothing so there is no need for God. He says in his book, "...the Universe can and will create itself from nothing. Spontaneous creation is the reason there is something rather than nothing, why the Universe exists, why we exist."<sup>1</sup> Given the nature of the statement that the whole universe could come from nothing, one would have expected a violent response asserting the insanity of this statement. Nothing is no-thing. It cannot cause anything because it is not anything. That is what the word means. The response from physicists was effectively nil. That should be revealing to a general public who generally know very little of physicists and their physics. It should make us realize that physicists have little concern about this issue. Indeed, this is made even clearer when we recognize that some physicists strongly supported Hawking's idea. Furthermore, apparently the problem has spread widely upward from the base science of physics, since most other members of academia were either silent or supportive of the idea. Those in academia who did argue against him tended to be those with already held strong religious

beliefs. Every single one of these that I heard said, effectively, that Hawking had no right to talk about where the universe came from because that subject belongs to metaphysics, not physics. This is fundamentally wrong, but to understand why and in what sense, seldom understood distinctions need to be made.

Why do top physicists so easily and comfortably fall into saying that something, let alone the whole universe, comes from nothing? The answer is that it is a confused way of speaking that reveals a fundamentally confused thinking that is common to the discipline. To understand why it is common, we have to understand that we physicists speak from equations, because they are at the heart of our thinking. And, due to this focus on logical systems centered on equations, key aspects of our thinking are left confused, leading, as we will see, to crazy thinking and statements when we try to speak without our equations, i.e. in ordinary language.

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[Click here to read more](#) or go to this link:

<http://www.iapweb.org/articles/Brief%20History%20of%20Nothing%20J2014-IAPmagazine.pdf>

To support IAP's research that leads to the understanding and writing of these articles, ***we ask for a donation of \$2 per article that you read or download.*** There are more articles at <http://www.iapweb.org/iapmagazine.htm>

***Anthony Rizzi, Ph.D.***, founder and Director of *The Institute for Advanced Physics* (an eleven year old non-profit organization with Vatican backing), gained worldwide recognition in theoretical physics by solving an 80-year old problem in Einstein's theory. He has physics degrees from MIT and Princeton University. Prior to IAP, he was senior scientist at Cal-Tech's Louisiana LIGO and taught at LSU.

<sup>1</sup> Page 180 of *The Grand Design*