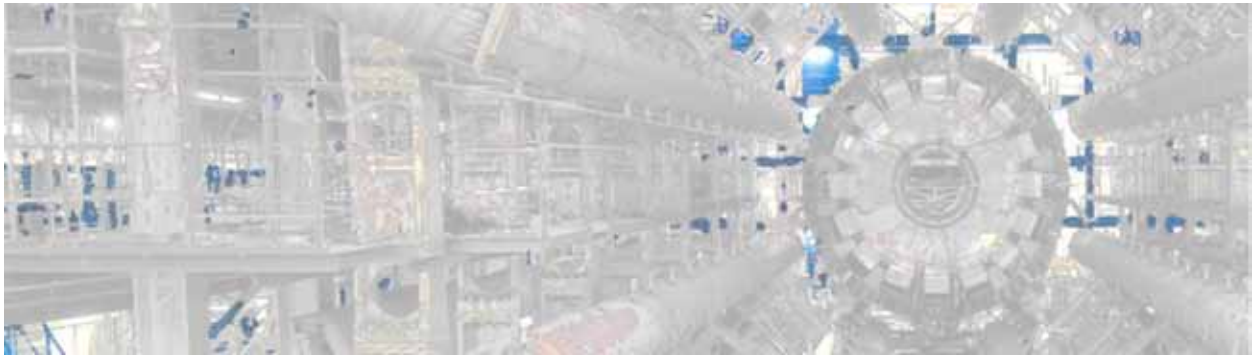


AMERICAN PHYSICAL SOCIETY

New England Section Newsletter

Volume 15 Number 1 Spring 2009

Paul H. Carr & Laurence I. Gould, Co-Editors



Spring 2009 Joint Meeting of the APS and AAPT New England Sections

**ELEMENTARY PARTICLE PHYSICS
IN THE 21ST CENTURY**

**Friday and Saturday – May 8 and 9, 2009
Northeastern University
Boston, Massachusetts**

The annual Spring joint meeting of the New England sections of the APS and the AAPT will be held on Friday the 8th and Saturday the 9th of May at Northeastern University

Registration, abstract, and housing information can be found at:

Web Page: <http://neu.edu/nesaps/>

Plenary Speakers — All plenary talks will be aimed at a general physics audience.

Physics Education:

Leon Lederman (Illinois Institute of Technology)
Education to Know the World in All Its Splendor

Philip Sadler (Harvard-Smithsonian CfA)
What Predicts Success in Learning Physics?

Experiment:

Francis Halzen (University of Wisconsin)
Icefishing for Neutrinos

Young-Kee Kim (Fermilab and University of Chicago)
Fermilab and the Quantum Universe

Paris Sphicas (CERN and University of Athens)
Probing the Physics of the TeV Scale: The CMS Experiment at the LHC

Michael Tuts (Columbia University)
Elementary Particle Physics at the Terascale: Experiments at the Large Hadron Collider

Theory:

Chris Quigg (Fermilab)
The Coming Revolutions in Particle Physics

Cumrun Vafa (Harvard University)
Stringy Predictions for Particle Physics

Banquet Speaker: Leon Lederman, Nobel Prize in Physics, 1988

There will be a special session: *Einstein's Waves: where is the graviton?* — focused on the searches for gravitational waves.

**Fall 2008 Joint Meeting of the APS and AAPT New England Sections
University of Massachusetts in Boston**

“Out of Equilibrium”



The annual Fall joint meeting of the New England sections of APS and AAPT was held on Friday the 10th and Saturday the 11th of October at the University of Massachusetts Boston.

Speakers included —

Bulbul Chakraborty of Brandeis University
Daniel Needleman of Harvard University
Pedro Reis of the Massachusetts Institute of Technology
Gene Stanley of Boston University
Dan Steck of the University of Oregon
Jeff Urbach of Georgetown University
AAPT offered workshops.

www.physics.umb.edu/APS_AAPT_Meeting



Prof. Gene Stanley, Boston University speaks on the anomalous properties of water. <http://buphy.bu.edu/people/show/hes>. Photo Credit: Paul H. Carr



Graduate student Juliang Li served as Registrar at the Campus Center; U Mass Boston. Photo Credit: Paul H. Carr

NES APS CONFERENCE REPORTS

Report on the 10th annual Greater Boston area Statistical Mechanics meeting Brandeis University

(communicated by Harvey Gould, Clark University)

Approximately 75 people attended the tenth annual Greater Boston Area Statistical Mechanics meeting on Saturday, October 18, 2008 at Brandeis University. The main goal of these meetings is to offer an informal and supportive environment where people from a variety of departments and institutions can meet and exchange ideas. In addition we want to give students a format where they can discuss their work with more senior scientists. The format was four invited talks of 30 minutes each and contributed talks of about 3 minutes each. Plenty of time is set aside for informal conversations. The invited speakers for this year's meeting were the following:

- Michael Hagan, Brandeis University, "How viral capsids adapt to mismatched cargoes: Identifying mechanisms of morphology control with simulations."
- Eleni Katifori, Harvard University, "Collapse and statistical mechanics of pressurized rings in two dimensions."
- Boris Svistunov, UMass Amherst, "Diagrammatic Monte Carlo."
- Pedro Reis, MIT, "Anticracks: Localization of deformation in solid foams under compression."

The tradition of the meeting is to invite speakers who have recently embarked on their independent research careers or who are new to the Boston area.

There were 36 contributed talks, about 20% more than in previous meetings. All talks were given with the aid of a laptop computer. Viewgraphs have become extinct! One of the better contributed talks was given by an undergraduate from Wellesley College. Although the quality of the contributed talks was generally good, too many speakers didn't leave sufficient time for meaningful questions. As a result we will request that future contributors limit their talk to two slides plus a title slide and submit their talk before the meeting.

Institutions represented included BAE Systems, Boston College, Boston University, Brandeis University, Brown University, Clark University, Dartmouth College, Harvard University, Massachusetts College of Pharmacy, MEARS Technologies, MIT, Northeastern University, UMass Amherst, UMass Lowell, University of California, Berkeley, University of Maine, University of Warwick, Wellesley College, and Yale University. There were approximately 35 graduate students, 20 post-docs, 15 faculty members, 2 undergraduate students, and 2 people from industry in attendance. Departments represented included applied mathematics, biophysical chemistry, chemistry, engineering, and physics.

The meeting has been subsidized by the New England Section for the past ten years at a cost of approximately \$10 per person for bagels, coffee, and lunch (sandwiches). As a result, the organizers of the meeting have not had to collect a registration fee and organizing the meeting has been relatively straightforward. After many years of threatening to do so, we collected a \$10 registration fee from those who failed to register.

The meeting is open to anyone, including non-members of the APS and NES, but nonmembers are encouraged to join both. The NES would like to encourage meetings of this type in the New England area and would welcome requests for financial assistance. The main criteria are that the meeting be open to all, widely announced, and make an effort to involve people who are not necessarily expert in the field. Requests for subsidies for student attendance are particularly welcome.

The organizers of the meeting are Bulbul Chakraborty, Claudio Chamon, Harvey Gould, and Bill Klein. More information about the meeting, including titles of the contributed talks and previous meetings, can be found at <physics.clarku.edu/gbasml/>.

Report on the 1st Yale Conference for Undergraduate Women in Physics

(communicated by Lauren Rosenblum, Yale University)

This past January [2008], Yale University hosted its First Annual Conference for Undergraduate Women in Physics, thanks in part to a generous donation from the New England Section of the American Physical Society. The conference ran concurrently with the Third Annual Conference at USC and a Conference and the University of Michigan.

The program included numerous research talks by faculty on a range of topics, in addition to laboratory tours and student research talks and posters. Presenters included Meg Urry, Elizabeth Rhoades, Howard Georgi, Midred Dresselhaus, Elsa Garmire, Wendy Zhang, and Janet Conrad. With meals, panels and discussions, participants had ample opportunity to meet and network with other female physicists including undergraduate students, graduate students, professors and professionals. Future opportunities were also addressed with graduate school and career panels.

Participant feedback was extremely positive and many students plan to return for our second conference, to be held on January 16-18, 2009. More information on the conference can be found on our website, <http://www.yale.edu/spsyale/cuwpy/>.

EDITORIALS and LETTERS TO THE EDITORS

Please Note: These content of what follows expresses each writer's considered opinion and should not be construed as representing any official position of any organization, including the Executive Board of the New England Section of the American Physical Society.

From the letters and editorials below, the reader may surmise that the issue of anthropogenic global warming (AGW) is not settled. This can also be seen from contributions to the debate existing in recent publications of this Newsletter (Fall 2007, Spring 2008, and Fall 2008 issues can be obtained from the NES APS website: <http://www.aps.org/units/nes/newsletters/> or, alternatively, from the section titled "LETTERS To The Editors" at <http://uhaweb.hartford.edu/LGOULD>)

What is surprising to us is that, given the apparent importance of the topic, there are so few people who have sent us letters (positive or negative) about the issues.

Paul Carr and Larry Gould, Co-Editors
NES APS Newsletter

Email LETTER to the Editors by Lawrence Neumann (received 6 October 2008) —

Items referenced: 1. Editorial — Paul H. Carr; Fall 2008 issue of the New England Section Newsletter — found at the NES APS website: <http://www.aps.org/units/nes/newsletters>.

In your editorial in the Fall 2008 Newsletter, you say "a renewed appreciation of the intrinsic beauty of nature can motivate its conservation." Some people will not appreciate the beauty of windmills or solar-cell farms. How do we balance the preservation of the ecosystem with a NIMBY attitude? Cape Wind is a local example of local people blocking a project with regional benefit. We need to convince people to appreciate "progress" and the "beauty" of structures that make it possible.

Larry Neumann
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REPLY to Lawrence Neumann by Paul Carr —

I agree that people need to be educated in the many facets of beauty. When I was in the Netherlands several years ago, the high point of my river cruise was seeing the beautiful wooden Kinderdike windmills. In the museums, almost all the paintings had these windmills, leading me to conclude that the windmill is a national symbol. Holland also has many modern windmills.

In my book, "Beauty in Science and Spirit," I note that beauty is a delicate dance between form and function, subjective perceptions and objective processes. A man's subjective perception of a beautiful woman's form and figure has an objective reproductive function. Hopefully, modern windmills will some day become "sexy."

Paul H. Carr
Co-Editor

Email LETTER to the Editors by Walter Stockwell (received 24 October 2008) —

Items referenced: 1. Editorial — Larry Gould; Fall 2008 issue of the New England Section Newsletter — found at the NES APS website: <http://www.aps.org/units/nes/newsletters>.

Dear editors,

I saw your letter to the editors page in the Fall 2008 edition of the APS NES Newsletter.
<http://units.aps.org/units/SNENG/news/news-fall08.cfm#editorials>

You state surprise that you did not receive many letters about the topic of global warming in response to the publication of previous "controversial" letters in your newsletter. Perhaps this is because most scientists realize the discussion you seem to want to promote is not a science-based discussion. Lord Monkton of Brechly [Monckton of Brechley]? Michael Chricton [Crichton]? What

papers are we supposed to discuss? Even Larry Gould, in his published response in your last issue, could not point to a single scientific paper in support of his argument. Instead he resorts to the following vague rhetorical device: “However, if one looks into the scientific research literature (and I have), besides papers which can be used to support the alarmist claims, there are also well-argued papers which present evidence that contradicts the alarmist claims. The problem is that the evidence from those latter papers is hardly mentioned by most sources.”

Apparently this evidence is so obscure that even Larry Gould cannot mention what it is! And he has looked into this! I have looked into many of the non-peer-reviewed sources Larry Gould mentions in his editorial, and have found them to be uniformly misleading. There is a reason that Larry Gould refers to sources like political blogs rather than journal papers. I know the reason, I bet most of your readers know the reason as well.

Look at Richard Lindzen and John Christy. These are scientists that have had long fruitful careers and now publicly oppose the notion of climate change in various ways. However, neither have published scientific papers that substantively dispute the conclusion that the earth is warming; that CO₂ causes warming; that much of the warming we experienced in the 20th century was caused by anthropogenically produced CO₂; and that the earth will continue to warm as we continue to add CO₂ to the atmosphere. When they publish scientific papers, scientists will pay attention.

People interested in the science should look at the IPCC Fourth Assessment [Assessment] Report, specifically the Working Group 1 report on “The Physical Science Basis.” This is a detailed and referenced review of the evidence backing AGW.

Sincerely,
Walter Stockwell, APS Member

REPLY to Walter Stockwell by Larry Gould —

Dear Walter,

If you are interested in the science, I think you should look more carefully into the Fall 2008 issue of the Newsletter. There you can find various letters, plus replies, which cite the literature. My Editorial contains links to a variety of sources, including those which are “peer-reviewed,” showing major scientific contradictions to global-warming alarmist claims. You may want to check out the links I give there.

Your remarks about Lindzen and Christy are in error:

If you would like to know what Richard Lindzen has been publishing lately, please go to his publication list at <http://www-eaps.mit.edu/faculty/lindzen/PublicationsRSL.html> — recent scientific publications are among those included in items 219 through 239 (for the years 2006 through 2009). You may find, of particular interest, item 229 — Taking Greenhouse Warming Seriously, *Energy & Environment*, 18, 937-950 (2007).

If you would like to know what John Christy has been publishing lately, please go to his publication list at http://www.atmos.uah.edu/atmos/christy_pubs.html — recent scientific publications are among those included in the first five items on the page (for the years 2006 through 2007). You may find, of particular interest — Douglass, D.H., J.R. Christy, B.D. Pearson and S.F. Singer, 2007: A comparison of tropical temperature trends with model predictions. *International J. Climatology*, DOI: 10.1002/joc.1651

If you are unfamiliar with the issues, the 50-minute video I reference in my Editorial is a quick way to see an accurate (based on my 4 years of studying the issue) presentation from the critical side. In addition, so that you can see the context, you may also find the Fall 2007, Spring 2008, and Fall 2008 issues of the Newsletter informative about the scientific base (or lack of it) for the global-warming alarmist claims. These can all be accessed via: <http://www.aps.org/units/nes/newsletters>.

Sincerely,
Larry Gould, Co-Editor

The following article is by Paul Carr, who spoke with Jim Hansen earlier this month; before a talk Dr. Hansen presented at the New Hampshire State House (Concord, NH).

DR JAMES HANSEN URGES PHASING OUT COAL BURNING

by Paul H. Carr



Dr. James E. Hansen speaking at New Hampshire State House, Concord, NH, 2 Apr. 2009

“We have to figure out how to live without fossil fuels someday. Why not now, before we have destroyed the creation?” Dr. Hansen, Director of the NASA Goddard Space Science Institute and Professor at Columbia University, spoke as private citizen.

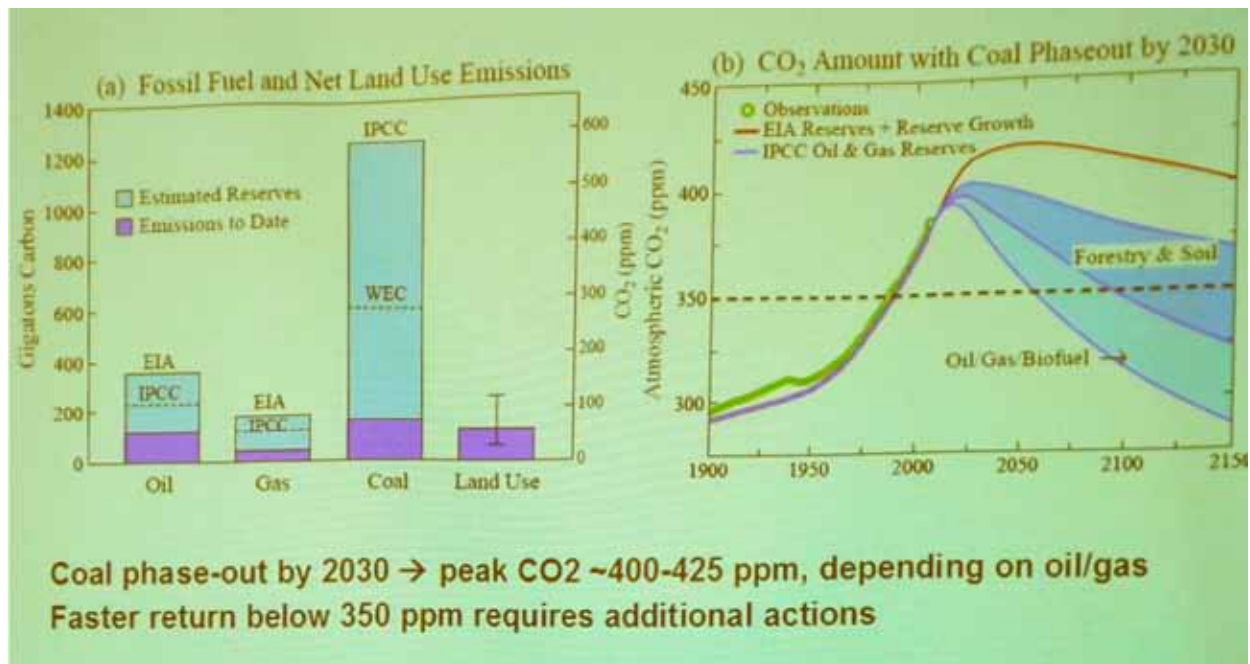
Dr. Hansen showed a photo of Lake Meade, which is only half full. Great rivers of the world, such as the Ganges, are fed by melting snow from glaciers, which have been receding due to global warming. These glaciers will disappear in 50 years, leaving hundreds of millions of people without fresh water.

Warmer temperatures are caused by increases in carbon dioxide (CO₂) levels, which could reach a point of no return. Within decades, CO₂ could reach 450ppm. Above this level, Antarctic ice will be on its way to disappearing completely. The Antarctic was ice free millions of years ago when sea levels were hundreds of feet higher than now.

Coal burning causes the largest increase in carbon dioxide levels. A moratorium on building new coal plants without carbon sequestration and a phasing out of present ones will enable our earth to recover a sustainable CO₂ level of 350 ppm, as per this illustration.

Each year several hundred thousand people in the world die of air pollution from coal. If that many people died from a nuclear plant malfunction, “we would shut them all down.”

To make Dr. Hansen’s plan to save our planet economically viable, he urged levying a tax



on carbon emissions with a 100% dividend. All the dividend money from the tax will be returned to the public, equal shares on a per capita basis. This will motivate conservation so that the money people receive from the dividend will exceed the added cost of energy from fossil fuels.

Dr. Hansen prefers his tax with 100% dividend to a carbon cap and trade system. However, the Chicago Climate exchange <http://www.chicagoclimatex.com/content.jsf?id=821> is a voluntary organization in which companies and some states are already participating.

Such a tax will give economic incentive to speed the development of our wind and solar energy resources. They are non-polluting, free, and will last as long as the sun burns out billions of years from now. Installation and maintenance will create new jobs. There is enough solar energy falling on the deserts of the Southwest to power the whole United States.

In response to a question about nuclear power, Dr. Hansen advocated research on 4th generation nuclear plants. Present ones use only one per cent of the potential nuclear energy available. The waste has to be stored for centuries. He also recommended research on the sequestering coal generated CO₂. Right now, there is no such thing as “clean coal.”

New Hampshire is presently considering spending \$457 million on a scrubber to remove air pollutants from its coal-fired electricity plant in Bow. If this were installed, the plant would still emit 3.7 tons of carbon dioxide annually, which is 20% of NH’s total. Following Dr. Hansen’s plan to save our planet, we should phase out the plan. By 2012, NH will have an additional capacity of 711 MW available from new hydro, wind, and sustainable wood burning plants.

In summary, the depletion of our oil reserves caused us to spend \$700 billion in 2008 for petroleum imports. Tax incentives will encourage new jobs for developing our renewable resources, which fortunately will not add to the CO₂ dioxide levels which are higher than they have been for the last 600,000 years.

More information is available on Dr. Hansen’s webpage <http://www.columbia.edu/~jeh1/>. Clicking on “Tell Barack Obama the Truth -- The Whole Truth” is recommended.

COMMENTS Related to Scientific Claims about “Global Warming”; from Larry Gould —

1. Atmospheric physicist, Fred Singer, has done much work on the science and scientific statements related to “global warming.” I asked him what was his opinion about Dr. Hansen’s claims. Here is his reply (which he granted me permission to publish; email of 4/4/09):

The basic problem with Hansen’s claims is that there is no evidence at all that anthropogenic CO₂ is actually causing the climate to warm. We have many cases where climate cools while CO₂ is rising; for example, in the past decade. And simple logic tells us that melting glaciers cannot reveal the *cause* of a temperature rise.

On the contrary, there is strong evidence, available in the UN-IPCC and official US government reports, that observed temperature trends disagree with what (greenhouse) climate models calculate. There is also good evidence that natural factors, beyond any human control, govern actual climate changes.

For details, see the NIPCC report “Nature – Not Human Activity – Rules the Climate” http://www.sepp.org/publications/NIPCC_final.pdf It lists 160 references to peer-reviewed publications. It also quotes Hansen [1998]: “...the forcings that drive long-term climate change are not known with an accuracy sufficient to define future climate change”

Dr. S. Fred Singer, an atmospheric and space physicist, is one of the world’s most respected and widely published experts on climate. Dr. Singer served as professor of environmental sciences at the University of Virginia, Charlottesville, VA (1971-94); distinguished research professor at the Institute for Space Science and Technology, Gainesville, FL (1989-94); chief scientist, U.S. Department of Transportation (1987-89); vice chairman of the National Advisory Committee for Oceans and Atmosphere (NACOA) (1981-86); deputy assistant administrator for policy, U.S. Environmental Protection Agency (1970-71); deputy assistant secretary for water quality and research, U.S. Department of the Interior (1967-70); founding dean of the School of Environmental and Planetary Sciences, University of Miami (1964-67); first director of the National Weather Satellite Service (1962-64); and director of the Center for Atmospheric and Space Physics, University of Maryland (1953-62).

Dr. Singer did his undergraduate work in electrical engineering at Ohio State University and holds a Ph.D. in physics from Princeton University.

Dr. Singer has published more than 200 technical papers in peer-reviewed scientific journals, including *EOS: Transactions of the AGU*, *Journal of Meteorology and Atmospheric Physics*, *Science*, *Nature*, *Bulletin of the American Meteorological Society*, *Geophysical Research Letters*, and *International Journal of Climatology*. His editorial essays and articles have appeared in *Cosmos*, *The Wall Street Journal*, *New York Times*, *New Republic*, *Newsweek*, *Journal of Commerce*, *Washington Times*, *Washington Post*, and many other publications. His accomplishments have been featured in front-cover stories appearing in *Time*, *Life*, and *U.S. News & World Report*. [from http://www.heartland.org/full/24385/Reply_to_RealClimates_Attacks_on_the_NIPCC_Climate_Report.html]

One of Dr. Singer’s recent books (coauthored, with Dennis Avery), is *Unstoppable Global Warming – Every 1,500 Years* (Rowman & Littlefield, 2007) and was on the *New York Times* bestseller list.

Dr. Singer is the Director of the Science & Environmental Policy Project (<http://www.sepp.org/>)

2. Because the so-called “skeptical” side of the “global warming” debate is so seldom seen, I am listing a recent excellent source for those interested in seeing that side: *International Conference On Climate Change (2009) — Global Warming: Was It Ever Really A Crisis?* --- Keynote Speakers include Hon. Václav Klaus, Ph.D. (President, Czech Republic and European Union), Hon. Harrison Schmidt (former U.S. Senator and NASA astronaut — Moonwalker, Apollo 17), and Richard Lindzen, Ph.D. (Alfred P. Sloan Professor of Meteorology at MIT) [downloadable Conference Proceedings: Audio, Video, PowerPoints, and PDFs can be obtain at the following website: <http://www.heartland.org/events/NewYork09/proceedings.html>]. Complete Program can be downloaded in parts at <http://www.heartland.org/events/NewYork09/PDFs/NY09Program.pdf>

3. **An Initiative** — On November 8, 2007 the APS Council adapted a policy position on global warming. It reads in part, “*The evidence is incontrovertible: Global warming is occurring. If no mitigating actions are taken, significant disruptions in the Earth’s physical and ecological systems, social systems, security and human health are likely to occur. We must reduce emissions of greenhouse gases beginning now.*” A number of members have taken issue with the definitiveness of the statement; what they see as a lack of scientific foundation consistent with the dire nature of the warning; and even the appropriateness of such a statement made on behalf of all members.

Accordingly an effort is underway to gather signatures for an Open Letter to the APS Council asking the Council to reconsider the statement and replace it with a more moderate one which reflects the actual state of the science. Those interested in learning more about this initiative may contact Roger W. Cohen (Fellow, APS) at rogerwcohen@comcast.net or Laurence I. Gould (Past Chair, 2004, of the NES APS) at lgould@hartford.edu.

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