

# BRINGING the UNIVERSE 2 WISCONSIN



## Bringing the Universe to Wisconsin Ira and Ineva Reilly Baldwin Final Report

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## Project Accomplishments

### Program plans and objectives

After two and a half years, 6,350 miles, 300 volunteers, and 52 events in 26 communities, *Bringing the Universe to Wisconsin* shared scientific exploration and innovation with over 5,000 Wisconsinites.

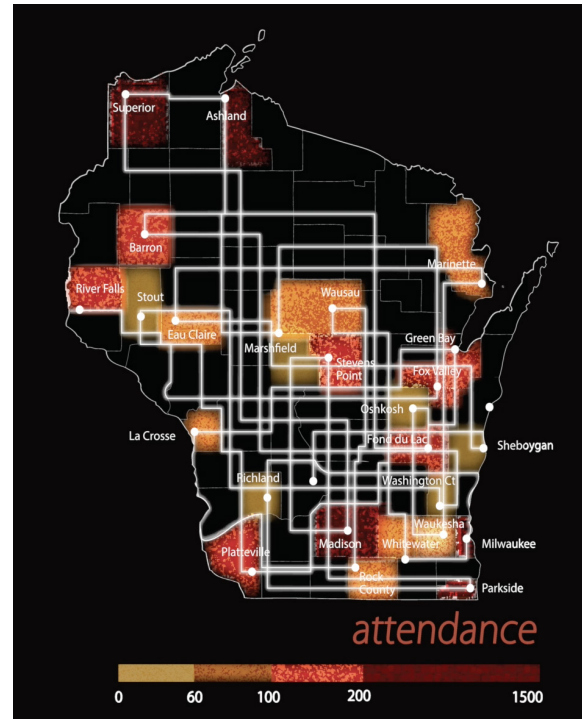
The primary goals of *Bringing the Universe to Wisconsin* were to:

- promote interest in science,
- connect people throughout Wisconsin to UW–Madison’s knowledge base,
- show how scientific and technological advances support and build on one another,
- excite future generations about science, and
- illustrate how fundamental research and exploration lead to discovery.

The UW–Madison-based Wisconsin IceCube Particle Astrophysics Center (WIPAC) supports a variety of research projects around the world. Funding for its largest project, the South Pole IceCube Neutrino Observatory, resulted in over 100 million dollars that were spent in Wisconsin. *Bringing the Universe to Wisconsin* used the story behind the design, construction, operation, and science of the IceCube Neutrino Observatory to engage people and motivate them to explore science further. The events explained astrophysics research to lay and academic audiences, focusing on the variety of skills and expertise needed built a huge telescope in one of the most remote, extreme environments on Earth. The broader impact of fundamental research was illustrated by describing how common technologies such as lasers, the internet, and GPS navigation emerged from unintended outcomes of basic research. The allure of Antarctica, the Wisconsin connections, and the enabling technologies make a compelling and captivating story in which to frame the larger science concepts.

### Methods used

For campus events, WIPAC staff coordinated with UW System physics and astronomy departments and with campus deans at two-year colleges. Continuing education and alumni associations were also contacted. They were extremely helpful in advertising events to the wider campus and local communities. Community events were developed in partnership with formal and informal learning institutions, local interest groups, and visitors bureaus.



Funds from the Ira and Ineva Reilly Baldwin Wisconsin Idea Endowment made it possible to share scientific exploration and innovation with over 5,000 Wisconsinites.

Our best turnouts resulted from partnerships with existing programs, leveraging their audience base. For example, in Madison we partnered with *Wednesday Nite @ the Lab*, a science lecture series and former Baldwin project that is currently supported by the Alumni Association. Our presentation about spending a year at the South Pole attracted over 200 people, an audience much higher than the typical turnout for these events.



Students pose in front of a South Pole backdrop with extreme cold weather gear.

*Bringing the Universe to Wisconsin* developed lectures, classroom visits, and hands-on activities to engage young audiences, both inside and outside of the classroom. Favorite activities included ice drilling and an interactive particle event quiz, where participants classify data from the IceCube detector. Science pubs and science cafés for adults provided opportunities for engagement in a more familiar setting and enabled participants to interact one-on-one with WIPAC personnel.

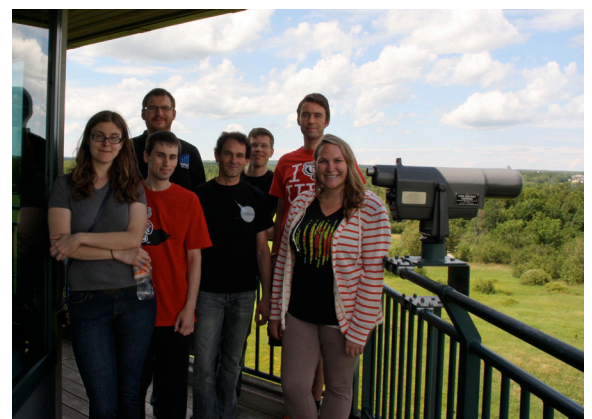
Events were advertised in local newspapers, alumni magazines, and in radio ads and interviews. Posters were sent to community partners for distribution in common areas and were used in targeted social media campaigns. Personal invitations were sent to local representatives, teachers, and informal science centers.

### Summary—numbers of events, locations, and participants

Our goals listed in the original proposal were to visit 25 communities, present over 50 talks, and interact directly with more than 2,000 Wisconsin residents. We surpassed those goals, with presentations at 52 locations in 26 communities and with over 5,000 Wisconsinites participating.

Audiences were made up of K-12 students, teachers, college and university students and staff, civic and alumni groups, business leaders, and the general public. State legislators were invited to *Bringing the Universe to Wisconsin* events in their districts. State Senator Sheila Harsdorf was at the UW–River Falls event and State Representative Mandy Wright gave introductory remarks at the UW Marathon County presentation.

Events generated questions about working at the South Pole, the nature of neutrinos, and future research projects. Evaluations indicated an increased interest in the IceCube Neutrino Observatory, a Wisconsin-based project that many of them did not know much about before the event/presentation.



WIPAC researchers and staff at the Northern Great Lakes Visitor Center in Ashland.



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Over 30 current and former WIPAC employees participated in *Bringing the Universe to Wisconsin* events. This included eight graduate students, four postdoctoral researchers, three senior scientists or faculty, and 16 staff members. The range of professions among the event volunteers demonstrates the breadth of talent needed for the success of substantial research projects.

## Fiscal Commitments

Matching funds covered the cost of communications and graphics personnel. WIPAC's graphic designer created print and digital designs for all *Universe to Wisconsin* events. In addition, graduate students, postdoctoral researchers, staff scientists, and faculty all donated time to participate in the events, a few of which spanned two or three days. Resources from the grant were also leveraged through campus and community partnerships. Several partners placed ads for events, covered room rentals, provided staff time, and donated refreshments. Over \$1,000 of WIPAC funds was used to purchase materials for developing new activities and building a large-scale model of the IceCube detector for events.

## Project Continuation

*Bringing the Universe to Wisconsin* built relationships between WIPAC and each UW System school. The program helped us better understand the challenges that local partners face engaging the community in science programs. One of the important lessons learned was that connecting to partners with regularly scheduled activities has a greater likelihood of success than one-time events. We also found that short presentations in combination with hands-on activities were a preferred event type. This allowed participants to engage at their comfort level and talk with researchers and staff in small groups.

WIPAC faculty, scientists, students and staff are committed to sharing research with Wisconsinites and will continue to offer programs and presentations across the state. This program established that the public cares and is interested in ongoing research when it is presented in an accessible, meaningful way. WIPAC will continue to respond to the large number of requests for presentations on the IceCube Neutrino Observatory and other projects. A few dozen students, some of whom participated in *Bringing the Universe to Wisconsin* events, will have the opportunity to participate in WIPAC research experiences through high school internships, one-day masterclasses, and undergraduate research projects.



Students program LEDs at the Platteville event with technical editor Jean DeMerit.



# BRINGING the UNIVERSE 2 WISCONSIN

## Timeline /locations/audience

November 27-28, 2012 <b>River Falls</b> Science café, digital planetarium shows, presentations and hands-on activities, classroom visits, and a science pub reaching university students and staff, 4 <sup>th</sup> grade classes, undergraduate quantum mechanics class, high school physics, engineering, and chemistry classes, and the general public.	150 participants
January 29, 2013 <b>Platteville</b> Presentations and hands-on activities for families, university students and staff and alumni. Highlight: Presentations by UW–Platteville alumni about their work with IceCube.	180 participants
February 5, 2013 <b>Green Bay</b> Presentation and muon telescope demonstration for 11-12 <sup>th</sup> grade physics, pre-engineering, pre-medicine, remedial science classes, Packerland Chapter of the American Meteorological Society, and university students and staff.	130 participants
February 27, 2013 <b>La Crosse</b> Presentation, muon telescope demonstration, and colloquium for 11-12 <sup>th</sup> grade physics students, university students and staff, and the general public.	65 participants
March 13, 2013 <b>Rock County/Evansville</b> Public and career presentations for university students and staff, high school physics classes, and the general public.	90 participants
March 14, 2013 <b>Marathon County/Wausau</b> Public presentation, teacher professional development, and digital planetarium tours reaching university student and staff, Wisconsin Society of Science Teachers meeting attendees, and the general public.	75 participants
April 12, 2013 <b>Whitewater</b> Colloquium and presentation and hands-on activities for university students and staff, and families.	70 participants
April 22, 2013 <b>Milwaukee</b> Colloquium, hands-on activities, presentation and preview of planetarium show for university students and staff and Milwaukee Public Museum visitors.	300 participants
April 24, 2013 <b>Richland Center</b> Public presentation and keynote speech for Alumni Association Founder's Day reaching university students, staff, and alumni and the general public.	60 participants
April 26, 2013 <b>Burlington</b> Hands-on activities and career presentations for high school students and the general public.	1,500 participants
May 3, 2013 <b>Stevens Point</b> Hands-on activities and colloquium for 3 <sup>rd</sup> –6 <sup>th</sup> grade students, university students and staff, and the general public.	150 participants
May 8, 2013 <b>Madison</b> Hands-on activities and <i>One year at the South Pole</i> presentation for families, university students, staff, alumni, and the general public.	200 participants
July 22-24, 2013 <b>Superior/Ashland</b> Presentations and hands-on activities reaching Wisconsin Science and Technology symposium attendees, Northern Great Lakes Visitor Center, summer school groups, families, and the general public.	995 participants



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October 19, 2013 <b>Marshfield/Wood County</b> Presentation, science pub, and STEM workshop for university students and staff, 4-5 <sup>th</sup> grade students, and the general public.	60 participants
November 5, 2013 <b>Fox Valley</b> Presentation for Rotary Club members and the general public.	995 participants
November 7, 2013 <b>Stout</b> Presentation and colloquium for Rotary Club members, university students and staff, and the general public	60 participants
December 4, 2013 <b>Washington County</b> Colloquium for university students and staff, STEM club, and the general public.	50 participants
February 18, 2014 <b>Barron County</b> Presentations airing on local access TV, for Rotary Club members, university students and staff, and the general public.	110 participants
February 25, 2014 <b>Fond du Lac</b> Hands-on activities, career presentations, and screening of <i>Chasing the Ghost Particle</i> for university students and staff, 3 <sup>rd</sup> –8 <sup>th</sup> grade classes, and the general public.	150 participants
March 20, 2014 <b>Oshkosh</b> Presentations for Rotary Club members, university students and staff, and the general public.	20 participants
April 8, 2014 <b>Waukesha</b> Presentations and book collection for public library visitors and university students and staff.	100 participants
April 10, 2014 <b>Marinette</b> Presentations and hands-on activities for 3 <sup>rd</sup> –6 <sup>th</sup> grade students, university students and staff, and the general public.	65 participants
April 17, 2014 <b>Eau Claire</b> Colloquium, presentation, and screening of <i>Chasing the Ghost Particle</i> for university students and staff and the general public.	70 participants
April 22, 2014 <b>Sheboygan</b> Presentations, hands-on activities, and screening of <i>Chasing the Ghost Particle</i> for university students and staff and the general public.	40 participants
April 24, 2014 <b>Baraboo/Sauk County</b> Career presentation and screening of <i>Chasing the Ghost Particle</i> for university students and staff, high school students, and the general public.	55 participants
May 2, 2014 <b>Manitowoc</b> Presentation and hands-on activities for university students and staff and the general public.	20 participants
May 10, 2014 <b>Fox Valley</b> Public presentation and screening of <i>Chasing the Ghost Particle</i> for university students and staff and the general public.	10 participants
August 6, 2014 <b>Milwaukee</b> Hands-on activities for Wisconsin State Fair attendees.	300 participants
October 6, 2014 <b>Madison</b> Presentation and screening of <i>Chasing the Ghost Particle</i> for university students and staff and the general public.	100 participants