Physics Outreach to Minority and Under-represented Middle School Kids in Rural North Central Indiana

Indiana Wesleyan University Society of Physics Students (IWU-SPS)

Indiana Wesleyan University

Marion, IN

Total Amount Requested: $300

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Abstract:

The Indiana Wesleyan University chapter of SPS will reach out to the rural community of North Central Indiana to stimulate interest in physics-based careers among middle schoolers from minority and financially-disadvantaged groups. A physics demo and career event will be organized through the local Boys and Girls Club.

Statement of Activity:

The Indiana Wesleyan University chapter of the Society of Physics Students (IWU-SPS) proposes to sponsor a "Future Careers in Physics" event directed towards middle school kids from minority and financially-disadvantaged groups in rural north central Indiana. Built into the event are visually-stimulating and engaging physics demonstrations to enhance interest in physics and physics career talks.

The city of Marion and surrounding smaller towns belong to Grant County, an area that has suffered dramatic poverty rates due to closures of several manufacturing plants and the loss of thousands of jobs. Today, 30 percent of the total Grant County population under 18 years of age live in poverty. Almost six of every ten Grant County students (57 percent) participate in the Free or Reduced Price Lunch Program. Of the children 5-17 years of age in the three school districts, 28 percent are in poverty, compared to national average of 20 percent. *African Americans, Hispanics, and women in the area are the most affected.* Only 16 percent eventually receive a bachelor's degree, and much less for minorities. Many local residents do not see a value in education, much less physics. Lack of knowledge and little encouragement perpetuates the cycle of poverty.

The newly-formed Indiana Wesleyan University (IWU) chapter of the Society of Physics Students (SPS) proposes to open the eyes of pre-college students and their parents to consider physics-based careers and professions. Middle school students will be targeted, mainly because research shows that many middle school girls lose interest in the sciences during this period. The proposed event will be called "Future Careers in Physics" and will take a two-pronged approach. First, SPS will stimulate physics interest of middle school students through several visually-stimulating and hands-on physics demonstrations. Hands-on demos will help make physics fun and accessible to those who are not normally given the opportunity to interact with demos, particularly because of limited opportunities due to socioeconomic status. Demonstrations will then be followed by two short physics career talks and Question & Answer (Q&A Forum) by a local physicist or engineer and SPS physics students, describing their plans and how they plan to pursue physics careers (IWU has physics minors and is now proposing a physics major.) Flyers from the AIP and AIP-comic books will be given away.

To better realize the event, IWU-SPS will partner with the local Boys and Girls Club of America. This partnership will bring the mostly African-American and Hispanic and socioeconomic minorities together to

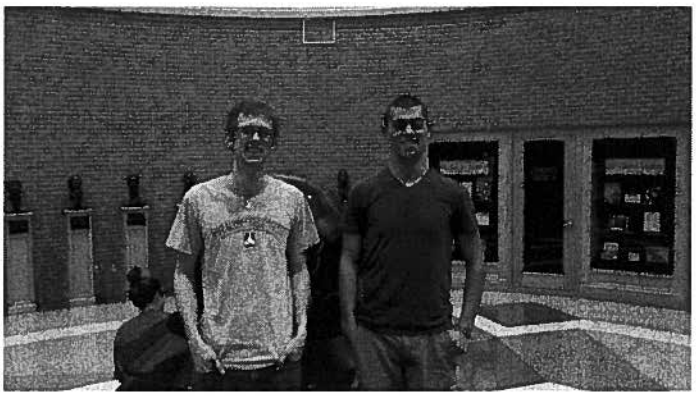
learn about physics. This will be accomplished through different stations for liquid nitrogen demonstrations, hovercraft rides, static electricity demos, hydrogen car, solar energy, and optical illusions. Each station, will have a flyer showing jobs associated with the physics phenomena. The idea is to inform participants about career opportunities that result from being educated in physics. Stations will be manned by volunteers from SPS and IWU minority students and staff members. Flyers will be circulated to middle school girls to inform them of an NSF-funded three-day "Summer Science Day Camp" to be conducted by SPS Faculty Advisor Prof. Ramos as part of his NSF grant. This will be an effective follow-up to this event. Our proposed event timeline is as follows: Official planning will commence in mid-January, after receipt of the award. While we already have contacts with the Boys and Girls Club of America, we will formalize communications and planning late January, and purchase proposed equipment and supplies, invite selected career speakers, and recruit other student and staff volunteers (in addition to SPS members) who are ethnic or socio-economic minorities by early February. Speakers will be confirmed by mid-Februay. By mid-March, we will begin training volunteers during two one-hour sessions. The event, which will occur in late March to early April, will last 1.5-2hrs at the local Boys & Girls club office.

In summary, through this activity, middle school students, mostly belonging to ethnic and financially-disadvantaged groups in a rural community that has been severely hit by closures over a decade, will view physics and physics-based fields in a differently light and hopefully, as a potential and practical career field.

Proposed Budget:

Supplies for Liquid Nitrogen Station (flowers, milk, balloons, cups, etc.)	$25.00
Solar Energy Kit	$70.00
Clean Energy Experiments (Hydrogen Car Racer)	$125.00
Supplies for Electricity Station (Aluminum plates, Smoke Filter Experiments, etc.)	$30.00
Miscellaneous supplies (duct tape, markers, cardboard, etc.)	$30.00
Transportation	$20.00
Total Funds Requested	$300.00

Tax ID # 0001814494-000



SPS Vice President Josh Ostrander (Left)
SPS President Robert Burchell (Right)

SPS President Robert Burchell and SPS Faculty Advisor, Dr. Roberto Ramos (Physics)