

Attendee emails will be shared with conference exhibitors.

## GIREP/National Society of Black Physicists/ National Society of Hispanic Physicists American Association of Chemistry Teachers (AACT)

## **Meeting Registration Form**

|  | 5/31/17 6/22/17 6/23-7/26  |
|--|--|
| How to Register  | Registration Fees (circle one)   |
| Mail form to: AAPT Programs & Conferences  | Full meeting \$385 \$509 \$708   |
| One Physics Ellipse, College Park, MD 20740  | Under. /Grad. student \$45 \$55 \$75<br>1 Day (day?) \$260 \$394 \$540   |
| • Fax form to: 301-209-0847  | Workshop Only \$85 (non-refundable)  |
| Please indicate your member society:   | Family/ Guest Registration: \$40 (Spouse/guest) \$30 Child (7–16 yr)   |
| □ GIREP  | NAME(S): 6 & under free Use Workshop Only below if attending Saturday or Sunday workshop without                 |
| □ NSBP   | attending the Meeting  |
| □ NSHP □ AACT  | Workshop Only (not attending meeting) \$85 plus fee \$  (fill out form on next page; write in fee) \$            |
|  | ( r.  |
| Please provide member number:  | Commercial Workshops (free) (check one)  □ CW01: Foster Learning, 7/24, 12–1 p.m. □ CW02: PASCO, 7/24, 12–1 p.m. |
| First Name   | ☐ CW03: PASCO, 7/24, 1:30–2:30 p.m. ☐ CW04: PASCO, 7/24, 3–4 p.m   |
| Last Name  | □ CW06: Perimeter Institute, 7/25, 12–1 p.m. □ CW07: Vernier, 7/25, 12–2 p.m.                                    |
| Address  | Special Events (optional)  |
| CityState/Province   | _  |
| ·  | 1. Cincinnati Reds Stadium Tour # Persons —— @\$22 \$<br>Saturday, July 22, 1:30 p.m.                            |
| CountryZip/Postal Code   | 2. First Timers Gathering # Persons (free) Monday, July 24, 7–8:30 a.m.  |
| Institution:   | ☐ 3. Spouse/Guest Gathering # Persons (free)   |
| Email  | Monday, July 24, 9–10 a.m.  4. Early Career Professionals Speed Networking Event # Persons (free)                |
| Emergency Contact  | Monday, July 24, 12–1:30 p.m.  |
| Phone:   | 5. High School Physics Teachers Luncheon # Persons @\$40 \$<br>Monday, July 24, 12–1:30 p.m.                     |
| Fax  | 6. Meet-up for Members and Supporters of LGBTQ Community  Monday, July 24, 12–1:30 p.m. # Persons (free)         |
|  | 7. Game Room Night # Persons (free)  |
| Check applicable boxes   | Monday, July 24, 9–12 p.m.  8. Cincinnati Observatory Visit and Tour   |
| Type of school affiliation:  | TBA # Persons  9. AAPT Fun Run/Walk  |
| ☐ High School ☐ Two-Year College ☐ Four-Year College ☐ Other   | Tuesday, July 25, 6–8 a.m. # Persons@\$30 \$   |
|  | 10. Two-Year College Breakfast #Persons@\$35 \$<br>Tuesday, July 25, 7–8:30 a.m.                                 |
| Disabilities/ Special Needs  | 11. Retired Physicists Luncheon # Persons @\$23 \$<br>Tuesday, July 25, 12–1:30 p.m.                             |
|  | 12. A Night on the Banks of the Ohio River # Persons @\$47 \$<br>Tuesday, July 25, 6:30–8 p.m.                   |
| If something comes up and you simply can't attend, all requests for cancellation must be made in writing by the following dates and the          | □ 13. Monday Raffles: Headphones 10:20 a.m. #_ @ \$2 ea. \$  |
| following fees will apply:   | ☐ 14. Tuesday Raffles: \$100 Gift card 10:20 a.m. #_ @\$2 ea. \$   |
| Cancellations by May 31, 2017 Midnight EST = \$75  | Kindle Fire 3:50 p.m. #_@\$2 ea. \$  |
| Cancellations from June 1, 2017 to June 22, 2017 = \$100   |  |
| Cancellations June 23 – July 6, 2017 = \$125   |  |
| No Refunds after July 6, 2017  | Registration Fee Workshop Fee(s) \$  |
| Photo Release: AAPT and its legal representatives and assigns, retain  | Special Events Fee(s) \$<br>\$10 Administration Fee \$   |
| the right and permission to publish, without charge, photographs taken during this event. These photographs may be used in publications, includ- | TOTAL: \$  |
| ing electronic publications, or in audio-visual presentations, promotional   | Make checks payable to AAPT; No credit cards accepted  |
| literature, advertising, or in other similar ways.   | Purchase Order No.   |



## **Workshop Registration Form**

Registration for workshops is first-come, first-served, so register early to secure a place in the workshop of your choice. Please use a checkmark for your initial choices, then indicate subsequent choices (in case first choice is unavailable) numerically. No form received after July 6, 2017 will be accepted in the Executive Office for processing. Workshop abstracts can be found online at www.aapt.org/Conferences/sm2017/workshops.cfm.

## NAME

(Use checkmarks for 1st choices, then rank subsequent choices numerically . . . 1, 2, 3, etc.)

All workshops will be held at the University of Cincinnati

| Wor   | kshops, Saturday July 22  | Time   |  | Fe   | es  |
|---|---|--|--|--|---|
|   |   |  |  | Mem.   | Non-Mem.  |
| W01   | Designing Circuits Activities for Middle School Students  | 8:00 a.m12:00 p.m.   | W01:   | \$70   | \$95  |
| W02   | Making High Speed Videos  | 8:00 a.m12:00 p.m.   | W02:   | \$60   | \$85  |
| W03   | Mathematical Modeling with Desmos   | 8:00 a.m12:00 p.m.   | W03:   | \$60   | \$85  |
| W04   | iMobile Physics and iPhysics Classroom  | 8:00 a.m12:00 p.m.   | W04:   | \$60   | \$85  |
| W05   | Make and Take Low Cost Spectrograph for Physics Labs  | 8:00 a.m12:00 p.m.   | W05:   | \$85   | \$110   |
| W06   | Modern Physics Labs on a Budget Using LEDs and Mixed Signal Processors  | 8:00 a.m12:00 p.m.   | W06:   | \$85   | \$110   |
| W07   | "Can We Have a Group Test?" Designing Collaborative, Active, Alternative  |  |  |  |   |
|   | Assessments for Physics Classes   | 8:00 a.m12:00 p.m.   | W07:   | \$60   | \$85  |
| W08   | Introductory Labs for Electricity and Magnetism   | 8:00 a.m12:00 p.m.   | W08:   | \$72   | \$97  |
| W11   | Activity-based Physics in the Advanced High School Classroom  | 8:00 a.m5:00 p.m.  | W11:   | \$75   | \$120   |
| W12   | Physics Activities for the Life Sciences (PALS)   | 8:00 a.m5:00 p.m.  | W12:   | \$85   | \$110   |
| W13   | Learn Physics While Practicing Science: Introduction to ISLE  | 8:00 a.m5:00 p.m.  | W13:   | \$95   | \$120   |
| W14   | The Perplexed Physicists' Primer on Teaching Astronomy  |  | W14:   | \$85   | \$110   |
| W17   | Low-Cost Open-Source Laboratory Instruments   | -  | W17:   | \$60   | \$85  |
| W18   | Physics of Toys   |  | W18:   | \$61   | \$86  |
| W19   | Computational Modeling with GlowScript and VPython  |  | W19:   | \$60   | \$85  |
| W20   | Examining the Relationships among Intuition, Reasoning, and Conceptual  |  |  |  |   |
|   | Understanding in Physics  | 1:00 p.m5:00 p.m.  | W20:   | \$60   | \$85  |
| W21   | An Example of Tutorials for Upper-division Physics Courses: Quantum Mechanics   |  | W21:   | \$65   | \$90  |
| W22   | PIRA Lecture Demonstrations I & II Condensed: Selections from the PIRA 200  |  | W22:   | \$95   | \$120   |
| W23   | An Introduction to Race, Ethnicity, and Equity in Physics Education   |  | W23:   | \$65   | \$90  |
| W24   | Student Activities from the IceCube Neutrino Experiment   |  | W24:   | \$60   | \$85  |
|   | •   |  |  |  |   |
| Wor   | kehone Sunday July 23   | Timo   |  | Eoc  | ie  |
|   | kshops, Sunday, July 23   | Time   | MOZ  | Fee  |   |
| W27   | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.   | W27:   | \$75   | \$100   |
| W27<br>W28  | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.   | W28:   | \$75<br>\$60   | \$100<br>\$85   |
| W27<br>W28<br>W30   | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.   | W28:<br>W30:   | \$75<br>\$60<br>\$60   | \$100<br>\$85<br>\$85   |
| W27<br>W28<br>W30<br>W31  | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.   | W28:<br>W30:<br>W31:   | \$75<br>\$60<br>\$60<br>\$70   | \$100<br>\$85<br>\$85<br>\$95   |
| W27<br>W28<br>W30<br>W31<br>W32   | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60   | \$100<br>\$85<br>\$85<br>\$95<br>\$85   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33  | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.   | W28:<br>W30:<br>W31:   | \$75<br>\$60<br>\$60<br>\$70   | \$100<br>\$85<br>\$85<br>\$95   |
| W27<br>W28<br>W30<br>W31<br>W32   | High Altitude Ballooning  Physics Invention Tasks: Developing Mathematical Creativity as a Scientific Practice  Fun and Engaging Labs | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60   | \$100<br>\$85<br>\$85<br>\$95<br>\$85   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33  | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60   | \$100<br>\$85<br>\$85<br>\$95<br>\$85<br>\$85<br>\$100  |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34   | High Altitude Ballooning  | 8:00 a.m12:00 p.m.<br>8:00 a.m12:00 p.m.<br>8:00 a.m12:00 p.m.<br>8:00 a.m12:00 p.m.<br>8:00 a.m12:00 p.m.<br>8:00 a.m12:00 p.m.<br>8:00 a.m12:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75   | \$100<br>\$85<br>\$85<br>\$95<br>\$85<br>\$85<br>\$100<br>\$85  |
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| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W35   | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>1:00 p.m.–5:00 p.m.  | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:<br>W37:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$60<br>\$85   | \$100<br>\$85<br>\$85<br>\$95<br>\$85<br>\$85<br>\$100<br>\$85<br>\$85<br>\$110                                   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38  | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:<br>W37:<br>W38:<br>W39:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$85<br>\$60   | \$100<br>\$85<br>\$85<br>\$95<br>\$85<br>\$85<br>\$100<br>\$85<br>\$110<br>\$85                                   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38<br>W39   | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:<br>W37:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$60<br>\$85   | \$100<br>\$85<br>\$85<br>\$95<br>\$85<br>\$85<br>\$100<br>\$85<br>\$85<br>\$110                                   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38  | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:<br>W37:<br>W38:<br>W39:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$60<br>\$85<br>\$60<br>\$65   | \$100<br>\$85<br>\$85<br>\$95<br>\$85<br>\$85<br>\$100<br>\$85<br>\$110<br>\$85<br>\$110<br>\$85<br>\$110<br>\$85 |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38<br>W39<br>W40                                    | High Altitude Ballooning  | 8:00 a.m12:00 p.m.<br>8:00 a.m12:00 p.m.<br>1:00 p.m5:00 p.m.<br>1:00 p.m5:00 p.m.<br>1:00 p.m5:00 p.m.<br>1:00 p.m5:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:<br>W37:<br>W38:<br>W40:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$60<br>\$85<br>\$60<br>\$65   | \$100   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38<br>W39<br>W40<br>W41                             | High Altitude Ballooning  | 8:00 a.m12:00 p.m.<br>8:00 a.m12:00 p.m.<br>1:00 p.m5:00 p.m.<br>1:00 p.m5:00 p.m.<br>1:00 p.m5:00 p.m.<br>1:00 p.m5:00 p.m.<br>1:00 p.m5:00 p.m.  | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:<br>W37:<br>W38:<br>W40:<br>W41:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$65<br>\$65<br>\$65   | \$100<br>\$85<br>\$85<br>\$95<br>\$85<br>\$85<br>\$100<br>\$85<br>\$810<br>\$85<br>\$110<br>\$85<br>\$90<br>\$90  |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38<br>W39<br>W40<br>W41                             | High Altitude Ballooning  | 8:00 a.m.–12:00 p.m.<br>8:00 a.m.–12:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.<br>1:00 p.m.–5:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W35:<br>W37:<br>W38:<br>W39:<br>W40:<br>W41:<br>W42:                                 | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$85<br>\$60<br>\$65<br>\$65<br>\$65   | \$100   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38<br>W39<br>W40<br>W41                             | High Altitude Ballooning  | 8:00 a.m12:00 p.m.<br>8:00 a.m12:00 p.m.<br>1:00 p.m5:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W35:<br>W37:<br>W38:<br>W39:<br>W40:<br>W41:<br>W42:<br>W43:                         | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$85<br>\$60<br>\$65<br>\$65<br>\$65   | \$100   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38<br>W39<br>W40<br>W41<br>W42                      | High Altitude Ballooning Physics Invention Tasks: Developing Mathematical Creativity as a Scientific Practice Fun and Engaging Labs   | 8:00 a.m12:00 p.m. 1:00 p.m5:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:<br>W37:<br>W38:<br>W40:<br>W41:<br>W42:<br>W43:<br>W44:<br>W45:         | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$85<br>\$60<br>\$65<br>\$65<br>\$65<br>\$85                                 | \$100   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38<br>W39<br>W40<br>W41<br>W42<br>W43<br>W44<br>W45 | High Altitude Ballooning  | 8:00 a.m12:00 p.m. 1:00 p.m5:00 p.m.   | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:<br>W37:<br>W38:<br>W40:<br>W41:<br>W42:<br>W43:<br>W44:<br>W45:<br>W46: | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65 | \$100   |
| W27 W28 W30 W31 W32 W33 W34 W35 W37 W38 W39 W40 W41 W42 W43 W44 T01   | High Altitude Ballooning  | 8:00 a.m12:00 p.m. 1:00 p.m5:00 p.m.   | W28: W30: W31: W32: W33: W34: W35: W37: W38: W40: W41: W42: W43: W44: T01:   | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65 | \$100   |
| W27<br>W28<br>W30<br>W31<br>W32<br>W33<br>W34<br>W35<br>W37<br>W38<br>W39<br>W40<br>W41<br>W42<br>W43<br>W44<br>W45 | High Altitude Ballooning  | 8:00 a.m12:00 p.m. 1:00 p.m5:00 p.m. | W28:<br>W30:<br>W31:<br>W32:<br>W33:<br>W34:<br>W35:<br>W37:<br>W38:<br>W40:<br>W41:<br>W42:<br>W43:<br>W44:<br>W45:<br>W46: | \$75<br>\$60<br>\$60<br>\$70<br>\$60<br>\$60<br>\$75<br>\$60<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65<br>\$65 | \$100   |