



# **MID-SCALE PROGRAMS**

## **MSIP AND MSRI 1&2**

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# MID-SCALE INNOVATIONS PROGRAM (MSIP)

- PROGRAM IS RUN BIENNIALLY: FY14, FY16, AND FY18
- TYPICAL PROGRAM BUDGET ~ \$15-20M / YR (HIGHER IN FY18 DUE TO PLUS-UP)
- WE ANTICIPATE A SOLICITATION IN SUMMER 2019 FOR FUNDING IN FY20
- SUPPORTS BOTH CONSTRUCTION AND OPERATIONS/SCIENCE
- SO FAR, 23 AWARDS HAVE BEEN MADE AND 21 ARE CURRENTLY ACTIVE
- TWO MAIN CATEGORIES: STAND-ALONE SCIENCE AND COMMUNITY ACCESS (BUT ALSO POTENTIAL TO SUPPORT DESIGN PROGRAMS AND LONG-TERM FACILITIES)
- TO DATE, THERE HAVE BEEN 15 SCIENCE AWARDS AND 8 ACCESS AWARDS
- FUNDED PROPOSAL BUDGETS BETWEEN \$600K AND \$10M (UPPER LIMIT \$30M)
- WIDE RANGE OF TOPICS, FROM NEARBY STARS TO CMB



# FUNDED MSIP PROGRAMS

- ZWICKY TRANSIENT FACILITY: OPTICAL SURVEYS, LSST PATHFINDER (PALOMAR)
- EVENT HORIZON TELESCOPE: RADIO IMAGING OF BLACK HOLES (VLBI, GLOBAL)
- FOUR CMB POLARIZATION PROGRAMS: ACT, POLARBEAR/SIMONS, CLASS, BICEP
- HYDROGEN EPOCH OF REIONIZATION ARRAY: HERA, LOW FREQ. RADIO (S. AFRICA)
- NANOGrav: PHYSICS FRONTIERS CENTER, AST SHARING ~20% (ARECIBO, GBT)
- TolTEC: MM-WAVE CAMERA (UMASS) ON LARGE MM TELESCOPE (MEXICO)
- TWO ADAPTIVE OPTICS: MAPS (MMT) AND KAPA (KECK)



# FUNDED MSIP PROGRAMS (CONT)

- DEEP SYNOPTIC ARRAY (DSA): 110 RADIO TELESCOPES FOR DETECTING FRBs (OVRO)
- LLAMAS: IFU SPECTROGRAPH FOR MAGELLAN (MIT)
- ALPACA: FOCAL PLANE ARRAY FOR ARECIBO (BYU)
- LONG WAVELENGTH ARRAY: SUPPORT FOR COMMUNITY ACCESS (UNM)
- GBT METROLOGY SYSTEM: TO TUNE THE GBT SURFACE FOR HIGH FREQ OBS (GBO)
- SUMIRE: DEEP GALAXY SURVEY (SUBARU TELESCOPE, PRINCETON)
- CHARA: OPTICAL INTERFEROMETRY, PURCHASE OF TIME (MT WILSON, GEORGIA STATE))
- LAS CUMBRES OBS.: OPTICAL TELESCOPE NETWORK, PURCHASE OF TIME (GLOBAL)





ACT



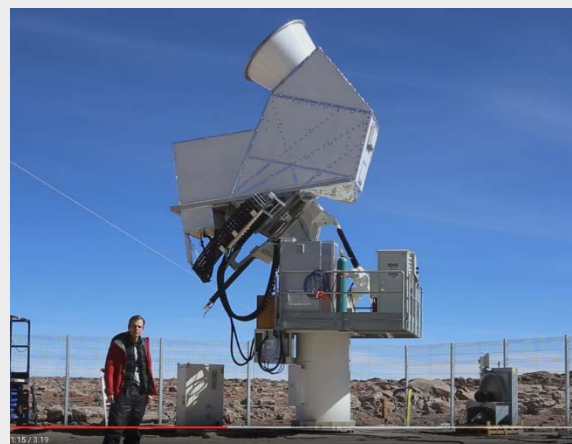
ACT + Polarbear



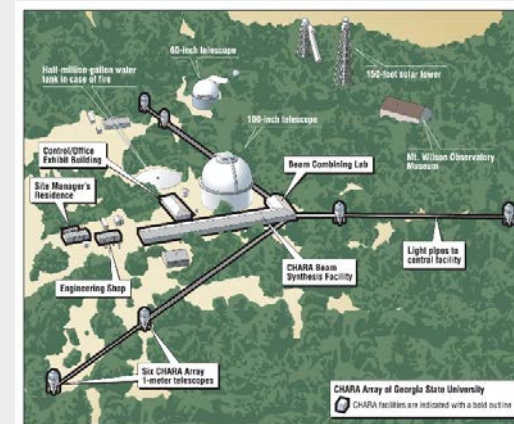
Polarbear



ZTF



CLASS



CHARA



HERA



ToITEC/LMT

# MID-SCALE RESEARCH INFRASTRUCTURE (MSRI)

NEW PROGRAM, OFFERED FOR THE FIRST TIME IN FY19



## MSRI-1

- IMPLEMENTATION \$6M TO \$20M
- DESIGN \$600,000 TO \$20M
  - (BUT NOT CONCEPTUAL DESIGN)
- PRELIMINARY PROPOSALS REQUIRED
  - DEADLINE FEB.19 – 246 RECEIVED
- INTERNAL REVIEW; FULL PROPOSALS BY INVITATION ONLY, DEADLINE MAY 20
- SUPPORT WITH FY 2019 FUNDS

## MSRI-2

- INFRASTRUCTURE FROM \$20M TO \$70M
  - (NO SCIENCE, NO DESIGN, NO O&M)
- LETTER OF INTENT – FEB.14, 64 RECEIVED
  - REQUIRED FOR PLANNING PURPOSES
- PRELIMINARY PROPOSALS, REQUIRED
  - DEADLINE MAR.11 (INVITATION NOT REQUIRED BUT MUST HAVE LOI)
- EXTERNAL REVIEW; FULL PROPOSALS BY INVITATION ONLY, DEADLINE AUGUST 2
- SUPPORT WITH FY 2020 FUNDS

*Upgrades to existing research infrastructure allowed*

*Require strong scientific merit, must respond to identified need of community*

*NSF-sponsored FFRDCs may submit (includes AST observatories, NCAR)*

*No operations & maintenance support; no scientific research support*

*Necessary commissioning possible under MSRI-1*