**M@TE - Monitoring at TeV Energies**

Thomas Bretz¹, Daniela Donner², Magdalena González³, Arturo Iriarte³, Rubén Alfaro³, Luis Martínez³, Ibraim Torres³, Gagik Tovmassian³, Daniel Durini⁴

---

**High Altitude Water Cherenkov Gamma-Ray Observatory (HAWC)**

---

**Observations at TeV Energies**

---

**First G-APD Cherenkov Telescope (FACT)**

---

**SiPMs: Ideal for Monitoring**

- Stable and robust [1]
- Stable telescope performance
- Robotic operation [2]
- High data taking efficiency
- Observations in bright ambient light
- Observations during full moon [3]
- Closing gaps
- Increased duty cycle
- More complete data sample

---

**SiPMs:**

- Ideal for Monitoring
- Stable and robust [1]
- Stable telescope performance
- Robotic operation [2]
- High data taking efficiency
- Observations in bright ambient light
- Observations during full moon [3]
- Closing gaps
- Increased duty cycle
- More complete data sample

---

**Improved Sensitivity**

- New generation of SiPMs
- Increased photon detection efficiency
- Cherenkov light yield increased by factor 1.6 compared to FACT
- Lower energy threshold

---

**Summary and Conclusion**

- Improved SiPM camera
- Lower energy threshold (< 1 TeV)
- Improved timing resolution (tens of minutes)
- Unbiased continuous monitoring
- ~400 hours/source/year
- Combined observations with FACT
- 12 hours continuous observations

---

**Notes:***Corresponding author: Daniela Donner, donner@astro.uni-wuerzburg.de

---

**References**

[4] D. Dorner et al. (FACT Collaboration), eConf C14102.1
[10] T. Bretz, D. Donner, aasp.conf, 681

---

**Affiliations:**

1. RWTH Aachen, Aachen, Germany
2. Universität Würzburg, Würzburg, Germany
3. Universidad Autónoma de México, Mexico City, Mexico
4. INAOE, Puebla, Mexico

---

**Sites in Mexico**

- HAWC site
  - 19° N 97° W
  - ~5.3 h to La Palma
  - 4100 m a.s.l.
  - Cross-calibration with HAWC
- San Pedro Martir
  - Optical site close to CTA candidate site
  - 31° N 115° W
  - ~6.5 h to La Palma
  - 2800 m a.s.l.
- Unbiased continuous monitoring in San Pedro Martir
- Continuous observations up to 12 hours

---

**Improved Sensitivity**

- New generation of SiPMs
- Increased photon detection efficiency
- Cherenkov light yield increased by factor 1.6 compared to FACT
- Lower energy threshold

---

**Summary and Conclusion**

- Improved SiPM camera
- Lower energy threshold (< 1 TeV)
- Improved timing resolution (tens of minutes)
- Unbiased continuous monitoring
- ~400 hours/source/year
- Combined observations with FACT
- 12 hours continuous observations

---

**Affiliations:**

1. RWTH Aachen, Aachen, Germany
2. Universität Würzburg, Würzburg, Germany
3. Universidad Autónoma de México, Mexico City, Mexico
4. INAOE, Puebla, Mexico

* Corresponding author: Daniela Donner, donner@astro.uni-wuerzburg.de