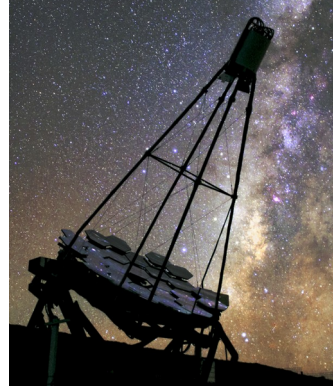


Multi-wavelength study of Mrk 421 during a TeV flare

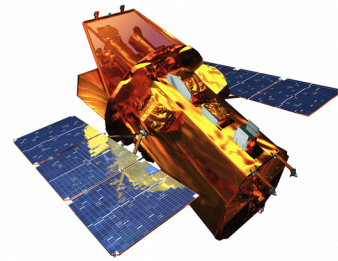
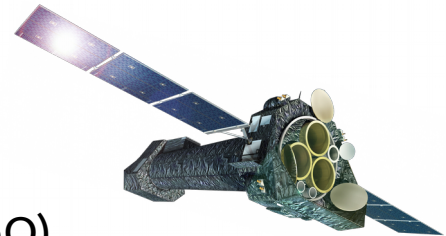
Andrea Gokus, A. Kreikenbohm, K. Leiter, T. Bretz*, T. Dauser, D. Dorner*, F. Eppel, J. Heßdörfer, M. Kadler, A. Kraus, M. Kreter, I. Kreykenbohm, M. Langejahn, K. Mannheim*, P. Thalhammer, J. Wilms, and the FACT collaboration: A. Arbet-Engels, D. Baack, M. Balbo, N. Biederbeck, A. Biland, J. Buss, L. Eisenberger, D. Elsaesser, D. Hildebrand, R. Iotov, A. Kalenski, D. Neise, M. Noethe, A. Paravac, W. Rhode, B. Schleicher, V. Sliusar and R. Walter

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What is the context of our work?

- Mrk 421 = among best-studied & brightest blazars → prime target for studies of bright rapid flares
- Simultaneous MWL coverage & dense follow-up = logistically challenging
- Our MWL monitoring program & pre-planned trigger campaign
 - ✓ Gamma-rays: FACT (monitoring)
 - ✓ X-rays: Swift/XRT (monitoring + ToO), XMM-Newton (ToO), INTEGRAL (ToO)
 - ✓ Optical/UV: Swift/UVOT (monitoring + ToO)
 - ✓ Radio: Effelsberg (ToO + long-term follow-up)
- Analysis of data from June 2019, because of VHE and X-ray flare
- Presenting gamma-ray and X-ray light curve, timing analysis with X-ray data, and radio spectra from before, during and after the flare



What are the results?

- Unprecedented dataset covering flare by Mrk 421
- Flare in TeV and X-ray regime take place simultaneously
- Sub-hour variability found in the X-rays
- No major response by the parsec-scale radio jet after the flare event

