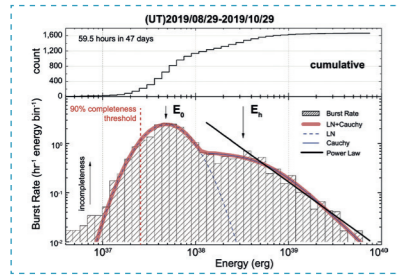
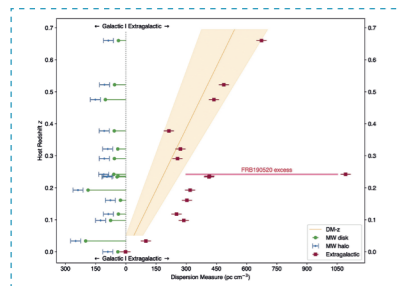


## Research Group of Fast Radio Burst (FRB) National Astronomical Observatories, Chinese Academy of Sciences

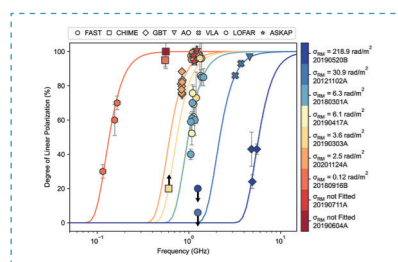


快速射电暴 FRB 121102 平均每小时爆发率的能量分布, 首次在任何快速射电暴源中确认特征能量和双峰结构。

The burst rate distribution of isotropic equivalent energy for FRB 121102. The characteristic energy and the bimodal energy distribution were seen for the first time for any FRB.



发现拥有最大宿主星系电子密度的 FRB  
The electron density of FRB 190520B's host galaxy is greater than that of the host galaxies of all other FRB sources.



提出重复暴偏振频率演化的统一机制  
A new unified characterization of frequency evolution of repeater FRBs' polarization.

Focusing on the study of Fast Radio Bursts (FRBs), the team has made significant discoveries that shed critical lights onto the physical properties of FRBs and attest to the dominating advantage of FAST's sensitivity in low-frequency radio bands. With these major discoveries of the dynamic Universe, the team begin to expand the horizon of this new major active frontiers of astronomy. Enabled by FAST, the team captured 1652 bursts from the first repeating FRB known to human, more than all previous publications combined, and revealed a bimodal energy distribution for the first time. The paper was voted into the "Top 10 Scientific Advancements in China" of year 2021. The team discovered the world's first persistently active FRB, which has the largest confirmed environmental electron density among all known FRBs. Built upon these two FAST deep observations, the team proposed a unified picture for the frequency evolution of repeating FRBs' polarization.

### Outstanding contributors of this research group

#### Li Di

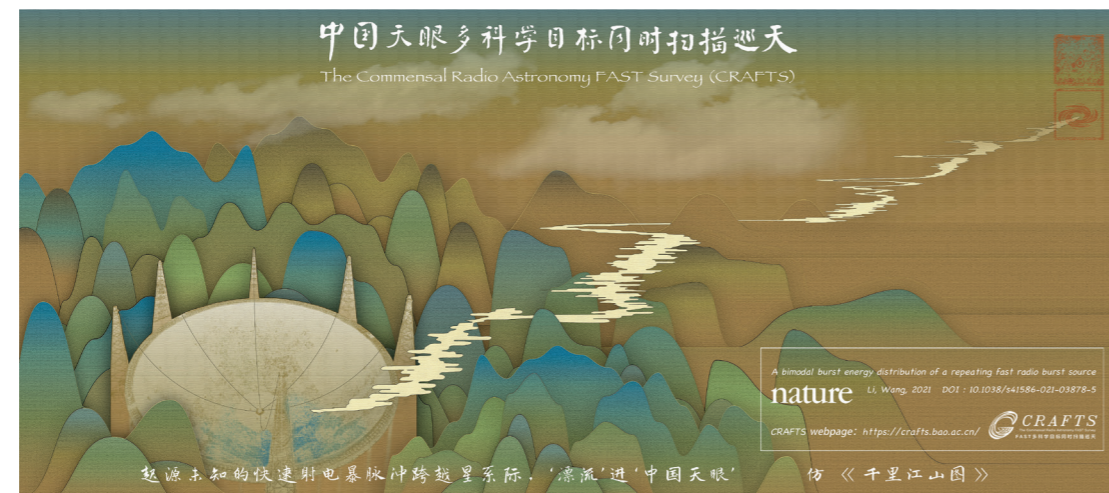
His innovative technique helped multiply FAST's survey efficiency, which facilitated the discovery of the world's first persistently active FRB through the Commensal Radio Astronomy FAST Survey (CRAFTS). He established the bimodal energy distribution of FRBs.

#### Wang Pei

He led the data processing of FAST observations of repeating FRBs, completed flux calibration and energy analysis of multiple repeating FRBs of FRB121102 and FRB190520, etc.

#### Zhu Weiwei

He developed the data processing and compression pipeline for CRAFTS, participated in organizing multiple repeating FRB observations with FAST, and provided a key technical foundation for the detection and analysis of repeating FRBs data.



FAST 望远镜观测快速射电暴艺术想象图, 仿王希孟(宋)《千里江山图》  
A "river" of bursts, based on real pulse profiles of FRB 121102, flow from its host galaxy into the FAST telescope. The mountains are based on burst count and energies distribution of the source, mimicking the painting "A Vast Land" by WANG Ximeng of the Song Dynasty.



研究集体成员合影  
Research group photo

### 快速射电暴研究集体

推荐单位: 中国科学院国家天文台

### 研究集体主要科技贡献:

该研究集体聚焦快速射电暴 (FRB) 这一天文领域重大热点前沿, 充分利用 FAST 的灵敏度优势, 做出重大发现, 开始拓展 FRB 领域前沿。利用 FAST 捕捉到 FRB 首例重复暴的 1652 个爆发, 超过此前本领域所有已发表文献所记录的 FRB 爆发数量总和, 首次发现其能量双峰结构, 入选 2021 年度“中国科学十大进展”; 发现了世界首例持续活跃的 FRB, 在所有已知 FRBs 中拥有最大的已确认环境电子密度; 系列 FAST 观测结果深度刻画了快速射电暴的基础物理特征, 揭示了重复暴偏振频率演化的统一机制。

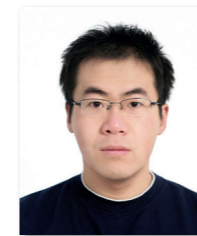


李 苒 Li Di

### 研究集体突出贡献者

#### 李 苒 中国科学院国家天文台

主要科技贡献: 提出倍增FAST巡天效率的创新观测模式, 领导优先重大项目CRAFTS发现世界首例持续活跃FRB。提出FRB能量双峰分布解释。



王 培 Wang Pei

#### 王 培 中国科学院国家天文台

主要科技贡献: 领导相关重复暴的FAST观测数据处理, 完成多个重复暴(FRB121102, FRB190520等)的流量定标和能量分析。



朱炜玮 Zhu Weiwei

#### 朱炜玮 中国科学院国家天文台

主要科技贡献: 开发了FAST数据处理和压缩的方案流程, 参与组织FAST多个FRB重复暴观测, 为信号探测和分析提供关键技术基础。

### 研究集体主要完成者

段 然 冯 毅



研究团队  
The research team.



成果入选 2021 年度《中国科学十大进展》  
«Top 10 Scientific Advances of China», 2021