

## **Ultra-low temperature experimental station for manipulation of superconducting quantum devices**

Ultra-low temperature experimental station for manipulation of superconducting quantum devices is equipped with several self-developed superconducting quantum bit chips, which provide remote control services through the cloud platform. Users not only can log in to the website (<http://quafu.baqis.ac.cn>), but also can operate the cloud platform on the web page, or download the python toolkit pyquafu on your local computer for programming. The experimental station also provides characterization and testing services for superconducting quantum chips. At present, the experimental station has two independent measurement and control platforms for quantum chips, and provides remote access interfaces. The hardware equipment includes dilution chiller, arbitrary wave generator, microwave signal generator, signal acquisition system, vector network analyzer, etc.

<b>Equipment names</b>	<b>Numbers</b>	<b>Models</b>	<b>Parameters</b>
Dilution refrigerator	2	Bluefors XLD1000	Minimum temperature: 10 mK 100mk cooling power: 1000 $\mu$ W
High-frequency arbitrary wave generator	2	Tektronix AWG70001A	Frequency range: 10 MHz to 18 GHz
Multi-channel arbitrary wave generator	3	Tektronix AWG5208	Sampling Rate: 2.5 GHz Amplitude range: 25 mVp-p to 0.75 Vp-p (single ended, 50 $\Omega$ terminated)
Vector network analyzer	1	Keysight N5224B	10 MHz to 43.5 GHz, 4-ports with two sources
Signal generator	2	Keysight E8257D	Frequency range: 100 kHz to 67 GHz
20 G signal generator	1	Anritsu MG3692C	Frequency range: 2-20 GHz
44 G vector signal generator	2	Keysight E8267D	Frequency range: 100 kHz to 44 GHz
Digital sampling oscilloscope	1	Tektronix DSA8300	Electrical Resolution: <20 $\mu$ V LSB; Horizontal Scale: 100 fs/div to 1 ms/div; TDR measurement enabled
20 G Multi-channel oscilloscope	1	Tektronix DPO72004C	4 Analog Channels; 20 GHz bandwidth
Multi-channel oscilloscope	2	Tektronix DPO70404C	4 Analog Channels; 4 GHz bandwidth



Photo of the experimental station

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