



# Study of the energy spectrum of cosmic rays obtained at the Hadron 55 installation located at an altitude of 3340 m.

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## ABSTRACT

The complex installation "Hadron-55" is one of the installations of the Tien-Shan high-mountain scientific station. The installation consists of two blocks spaced 2.2 meters apart. Upper unit - gamma block comprises two rows of ionization chambers arranged in mutually perpendicular directions. This block is used in determining the energy of electron-photon component and in conjunction with all detectors determines the trajectories of particles. At the level of the gamma block, scintillation detectors are installed on an area of 350 m<sup>2</sup>. The lower unit consists of six rows of ionization chambers containing iron absorber. This unit is used to measure the energy of the neutral and charged components of cosmic radiation, as well as to determine the trajectory of particles. In this work, a brief description of the installation and calculation of the energy spectrum of cosmic rays, obtained by experimental data installation. In addition, the daily variation of cosmic ray energy is processed, which is planned to be used in the future for a new experiment on monitoring seismically dangerous zones.

## HADRON 55

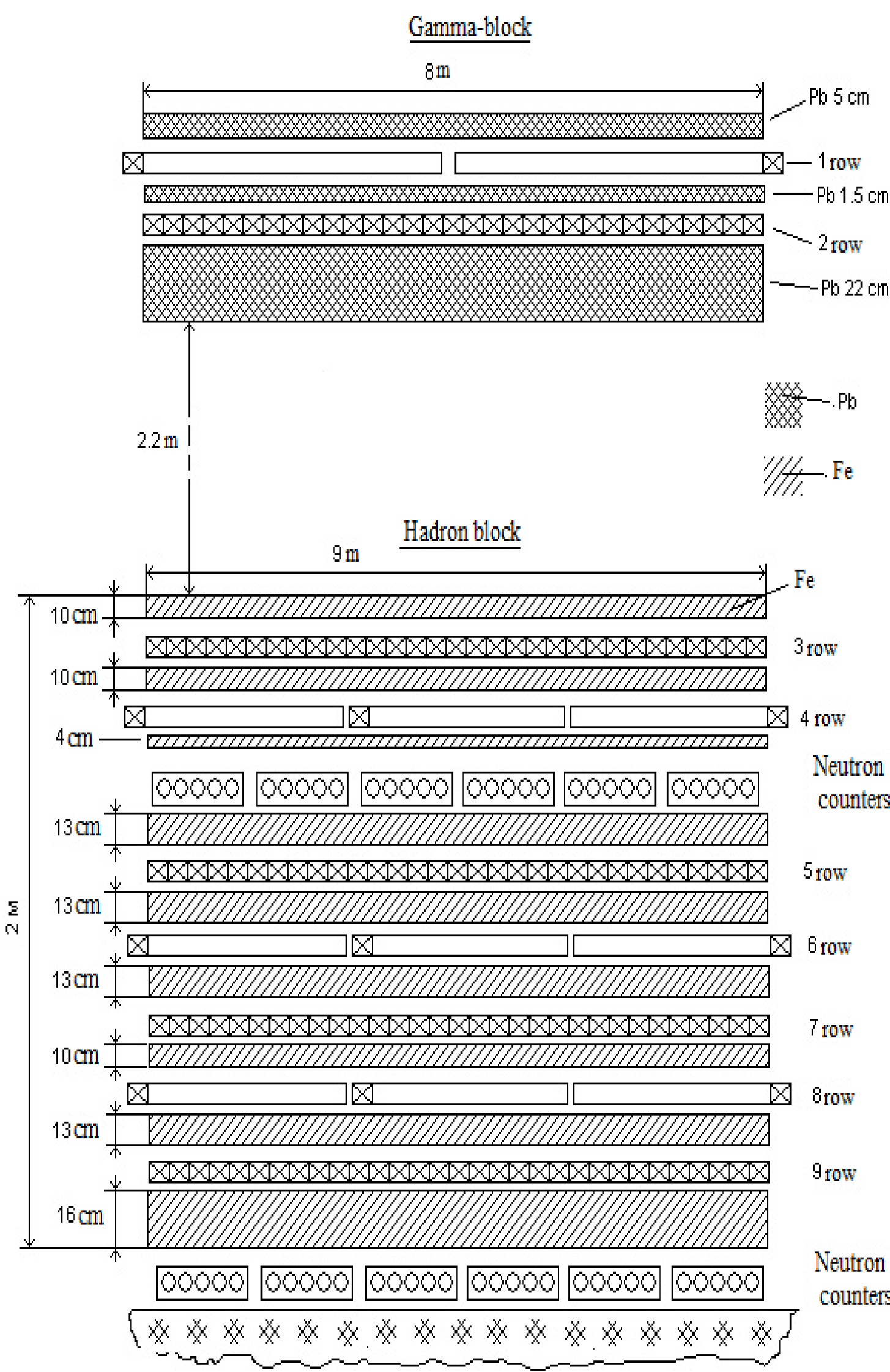


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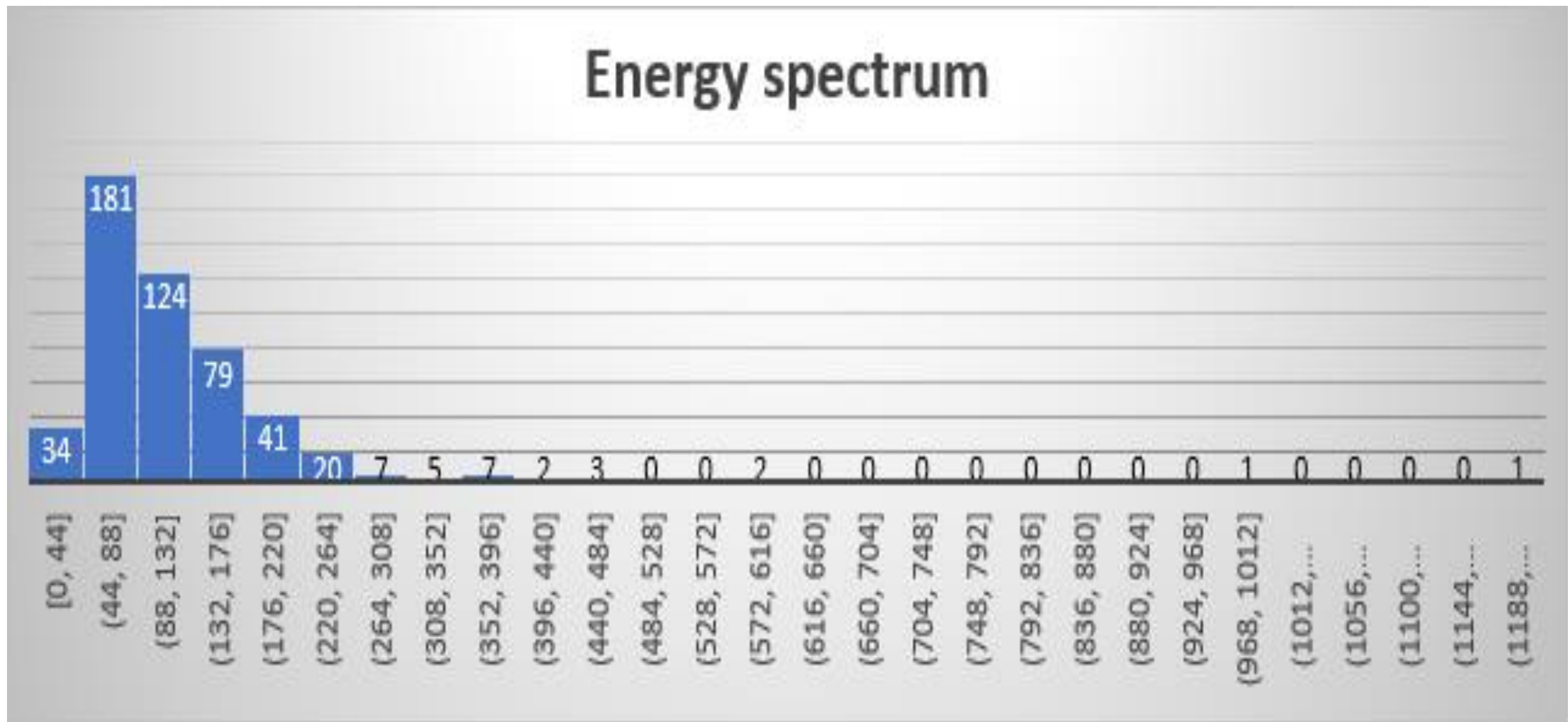
## INSTRUMENTATION

- The HADRON-55 (we also call 'calorimeter') setup represents a two-tiered coordinate scintillation-ionization calorimeter (CSIC) of 55 m<sup>2</sup> in area and 1050 g/cm<sup>2</sup> deep (Fig. 1) surrounded by a dense array of scintillation detectors which will be extended in future outside the laboratory building and will cover an area of more than 2 km<sup>2</sup>. The tiers are spaced vertically by 2.2 meters. The upper deck (called the Gamma-block) contains two rows of ionization chambers (IC) (100 IC in the first row, 138 in the second and filled with argon) under it, which are arranged in mutually perpendicular directions.
- The lower tier consists of 6 rows (from 3 to 8 rows) of ionization chambers (144 IC in each row), which consists of iron absorber with gaps where IC, neutron and Geiger counters are placed. The Geiger counter is used to detect the muon component of EAS, and the neutron counters are used to detect neutrons. Neutron counters filled with Argon and Helium-3. Series modules are assembled in 6-7 pieces.



• HADRON 55 schema

## RESULTS



## CONCLUSION

- Using the methodology for processing data obtained in cosmic rays studies on the HADRON-55 installation searches for similar structures in the data obtained at high-energy accelerators, that is, in the future we can compare this data with the data obtained at particle accelerators.
- In addition, the data obtained using HADRON-55 will be used in other experiments conducted at TSHSS

## REFERENCES

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