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## On the origin of cosmic rays of extreme energy

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The origin of the highest-energy cosmic rays continues to puzzle scientists. The data collected over the past 20 years by the Pierre Auger Observatory and the Telescope Array indicate the presence of anisotropy in their arrival directions, suggesting extragalactic astrophysical sources. However, the nature of these sources remains unsolved. This study aims to assess two potential models of extragalactic candidate sources, namely starburst galaxies (SBGs) and active galactic nuclei (AGNs), by analyzing the propagation of ultra-high-energy cosmic rays in the Galactic and extragalactic media. The simulations are conducted with the CRPropa 3 software framework, considering all pertinent particle interactions and magnetic deviations. The results show that nearby SBGs, and to a lesser extent, nearby AGNs, may explain some of the observed medium-scale anisotropies. Nevertheless, none of the scenarios can account for the large-scale anisotropy reported by the Pierre Auger Observatory.

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