

## **DISCRIMINATION BETWEEN POSSIBLE COSMIC RAY SOURCES**

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Different scenarios of the origin of the cosmic radiation invoke different chemical abundances of the accelerated material. A determination of the abundances of the nuclei in the cosmic rays as they arrive in the solar system can, in principle, be used to discriminate between these different scenarios. Unfortunately, the compositional changes introduced during the propagation of the nuclei through the interstellar medium introduce serious uncertainties in relating the observed composition to that at the source. It is shown here that there are a number of "signature" elemental ratios among the heaviest elements in the cosmic radiation that should allow for clear discrimination between some of the most popular current theories of the origin. These ratios appear to be robust in that they are not strongly energy dependent nor do they depend critically on the precise details of the propagation models or parameters. In addition, the discriminating power of these ratios is not seriously degraded by the presence of the amounts of overlying atmosphere expected in high altitude balloon exposures. The forthcoming TIGER balloon flight will determine some of these ratios, while the proposed HNX mission will be able to determine all these ratios with the required accuracy.