L. I. Matveenko, I. G. Moiseev, A. B. Severnyi, and **R. L. Sorochenko.** Prospects for the development of ultralong-baseline radiointerferometry. Ultralong-baseline radiointerferometry has turned a new page in the history of astronomy: the nuclei of quasars and radio galaxies and regions of formation of stars and planetary systems have become accessible to investigation. Ultralong-baseline radiointerferometry consists of taperecording of signals from the source of interest at widely separated antennas and subsequent computer processing of these signals. The global interferometer network comprises practically all the large radio telescopes and has an angular resolution of ~100 arc-micro-

seconds. The size of the earth does not impose a limit. The sensitivity of the instruments and scattering in the interstellar medium may constitute limiting factors. The baseline length may reach $\sim 10^6$ km and the angular resolution $\sim 10^{-6}$ sec at short centimeter wavelengths; the baselines fit within the earth at meter-band wavelengths. The trend in the development of radiointerferometry is the design of specialized systems that work in real time; the received signals are rebroadcast via a relay in space to a processing center. The ground network may be supplemented by an earthorbiting cosmic radio telescope. This would not only increase angular resolution, but, more importantly,

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would also make it possible to register all the spatial frequencies of an image and produce an accurate map of the object.

Ultralong-baseline radiointerferometry is being used more and more often in solving problems of geophysics, celestial navigation, positional astronomy, measuring the drift of continents, and predicting earthquakes. The positions of astronauts on the moon were fixed accurate to ~ 20 cm. The position of a Venus lander has been registered with high accuracy. This technique can be used to investigate the dynamics of the Venusian atmosphere with the aid of a small transmitter-carrying balloon.

 ¹L. I. Matveenko, N. S. Kardashev, and G. B. Sholomitskii, Izv. vuzov. Ser. Radiofizika 8, 651 (1965).
²R. Batchelor *et al.*, Pis'ma Astron. Zh. 2, 467 (1976) [Sov. Astron. Lett. 2, 181 (1976)].