L. R. Kogan, L. I. Matveenko, I. G. Moiseev, and R. L. Sorochenko. *Studies of maser sources with the aid of ultralong-baseline radiointerferometry.* Sources of maser radiation have been observed in a number of gas-dust complexes. Their structures are being investigated systematically with the Crimea-Pushchino radiointerferometer and the global network. The resolution of the interferometers at 1.35 cm reaches 100 arc microseconds. The maser sources have a complex structure consisting of many components. A separate spectral line corresponds to each component. The brightest components have velocities of $\leqslant 15$ km/sec in their proper system and are concentrated in specific zones of activity. Their dimensions are ~1000 a.u. The fast components are distributed over a field of $\sim 10^4$ a.u. The dimensions of the individual maser components are $\leqslant 10^{13}$ cm; they concentrate in disks and are probably associated with protoplanetary rings. The emission of individual details is variable; flares are observed, as, for example, in June of 1971 in the object W49. An unusually bright detail with a radio flux density of $2 \cdot 10^6$ Jy and a brightness temperature $T_b \gtrsim 10^{16}$ K is found at the present time in Orion *A*. The high brightness temperatures of the maser components are evidence of high directivity of the radiation. The motions of the components are observed.

[1]L. I. Matveenko, L. R. Kogan, L. S. Chesalin, V. I. Kostenko, A. Kh. Papatsenko, G. D. Kopelyanskiĭ, I. G. Moiseev, V. A. Efanov, and R. L. Sorochenko, Pis'ma Astron. Zh. **6**, 662 (1980) [Sov. Astron. Lett. **6**, 347 (1980)].

[2]L. I. Matveenko, *ibid.* **7**, 100 (1981) [**7**, 54 (1981)].

[3]R. Genzel, D. Downes, M. H. Schneps, M. J. Reid, J. M. Moran, L. R. Kogan, V. I. Kostenko, L. I. Matveyenko, and B. Ronnang, Astrophys. J. **247**, 1039 (1981).

L. I. Matveenko, I. G. Moiseev, A. B. Severnyĭ, 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 tape-recording 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-microseconds. 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 earth-orbiting cosmic radio telescope. This would not only increase angular resolution, but, more importantly,