

## EXERCISE 5

### Observation of the extended radio-emitting region. Preparation of the map.

#### Before the exercise:

Choose the right, rectangular area of the Milky Way. Prepare it's observation. Designate the necessary ephemerides.

#### Tasks:

1. Perform scans of the selected area in hour angle. Adjust the rate of movement of the telescope. Adjust the distance of scans in declination in order to ensure getting at least five observation points on the antenna beam.
2. Perform observations of sources with known flux.

#### Report (coverage):

1. Align base in scans.
2. Transform observed signal to the antenna temperature unit, and then to the unit of the stream.
3. Transform scans to the equatorial coordinates.
4. Plot a contour map and 3D map of the observed area.
5. Determine the coordinates  $(x_m, y_m)$  of the maximum signal on the map by matching two -dimensional Gaussian. Note the value  $S_m$  of the maximum signal.
6. From the signal in the grid points subtract a point source (subtract two-dimensional Gaussian curve with coordinates  $(x_m, y_m)$  determined in point 5 and amplitude  $S = 0.8 \cdot S_m$ ).
7. Repeat points 5 - 6 until the brightest sources in the area will be subtract.
8. Present a final map of the area after subtraction of the brightest sources.
9. Calculate the total value of the flux of the subtracted sources in the observed area. Identify relevant sources using available databases.