WAVELET ANALYSIS AS APPROACH TO RECOGNIZE ABUNDANCE ZONE IN GALAXY DISTRIBUTION

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The algorithm to recognize an abundance zone in galaxy distribution is proposed. The method used is the 3–D wavelet analysis which allows to construct a "tree" of wavelet coefficients keeping information about the distribution of galaxies in zones surrounding an abundance zone. These coefficients are to be used for prediction of galaxy distribution in an abundance zone.

Use of the wavelet analysis for detachment of the large-scale galaxy distribution and galaxy cluster structure has such advantages, which allows to apply it for recognition and prediction of galaxy distribution in "non-visible" zones for observations, *i.e.*, abundance zone. To check this idea, it is proposed to apply the reversed wavelet analysis to the complete samples of galaxies surrounding an abundance zone.

The algorithm is as follows.

1) Data: using various catalogues (in first turn, catalogues of galaxies visible in IR) to compile 3–D samples of galaxies surrounding an abundance zone;

2) Samples: using these samples to compile samples of galaxies with limit stellar magnitude (up to 14^m, 15^m, ..., 24^m);

3) Completeness: to apply tests for completeness for each of these samples;

4) Wavelet coefficients: to search a set of wavelet coefficients for each of these samples;

5) Test: to test for a web of wavelet coefficients to be corrected for each of subsequent (by stellar magnitude) sample;

6) "Tree" of wavelet coefficients: to form a real "tree" of wavelet coefficients;

7) "Visible" galaxy distribution: applying a set of wavelet coefficients to testify actual galaxy distribution (a real "tree" of wavelet coefficients should reproduce 3–D distribution of galaxies involved in processing);

8) Abundance zone: applying a final set of wavelet coefficients to predict galaxy distribution in "non-visible" zone.

The work is in progress.