**ARE THERE ANY CLUSTERINGS OF THE COSMIC-RAY EXPOSURE AGES OF L CHONDRITES?** V.A.Alexeev. Vernadsky Inst. of Geochem. and Analyt. Chem., USSR Acad. Sci., Moscow, USSR

Cosmic-ray exposure ages of meteorites may by able to provide some information about the meteorites' origin. It is well known the distribution of exposure ages of H chondrites have a clear peak at 6-7 Myr, containing about 50% of this class meteorites. However there are some discords about the presence of peaks in the L chondrite distribution [1,2, u.a.]. For further investigation of this problem we chose the method which was used by Tanenbaum [2] for only several tens of H and L chondrites. We have now exposure ages of several hundreds of chondrites, so we can obtain the more statistical significance of conclusions. The method consists of check is the Poisson statistics and consequently the interval law for distribution of exposure ages observed or not.

We have analysed the distribution of the exposure ages of 268 L chondrites within the range of 0 to 50 Myr [3]. There were next steps of analysis. (a) All values of exposure ages were listed in ascending order, i.e. from most recent to oldest. (b) The intervals between consecutive ages were found by subtracting each age from the one following it. (c) Found intervals were also listed in ascending order and (d) their distribution was compared with expected one at Poisson statistics by chi-square test (there was calculated the value of chi-square).

Peaks in the distribution of ages may have been smoothed out some what due to various uncertainties. To compensate for this, each age was interpreted as meaning that the true age was a random variable distributed from a Gaussian population whose mean is equal to the calculated age. The standard deviation of this hypothetical population correspond to the size of assumed uncertainty in the data. Thus each age was replaced by a random number drawn from the appropriated population. New set of ages was analysed the same way - by steps of (a) to (d). This procedure was applied to 100 sets of randomized age data using as a standard deviation for each population, 1% of the population's mean. This represent a +/-1% uncertainty in each age. Then there was constructed the histogram for these 100 chi-square values. The entire process was then repeated assuming uncertainties in the data of +/-5%, 10%, 15%, and 20%. Obtained histograms are given in the Fig. 1 (column 2) in comparison with expecting distribution of chi-square values according to Poisson statistics (the curves).

The same procedure was made for the uniform distributed random numbers (column 1), for random numbers ("ages") which probability of appearance was decreased with increase of t as numbers of L chondrite ages [3] (column 3), and for H chondrites (column 4).

**CONCLUSIONS.** Histograms for random numbers (column 1) mainly good agree with Poisson statistics. Differences between histograms and Poisson statistics (curves) for L chondrite distribution (column 2) are similar those for model distribution (column 3), so we may apparently say the

distribution of L chondrite exposure ages have only exponential decrease of the meteorite numbers with increase of age and have not any significant clusterings. The peak in the distribution of the H chondrite ages [3] stipulates the large difference between histogram and Poisson statistics (column 4).

References:
[1] Crabb J. and Schultz L.(1981) Geochim. Cosmochim. Acta, 45, 2151-2160.
[2] Tanenbaum A.S.(1967) Earth Planet. Sci. Letts, 2, 33-35.
[3] Alexeev V.A. Exposure ages of L and LL chondrites.This volume

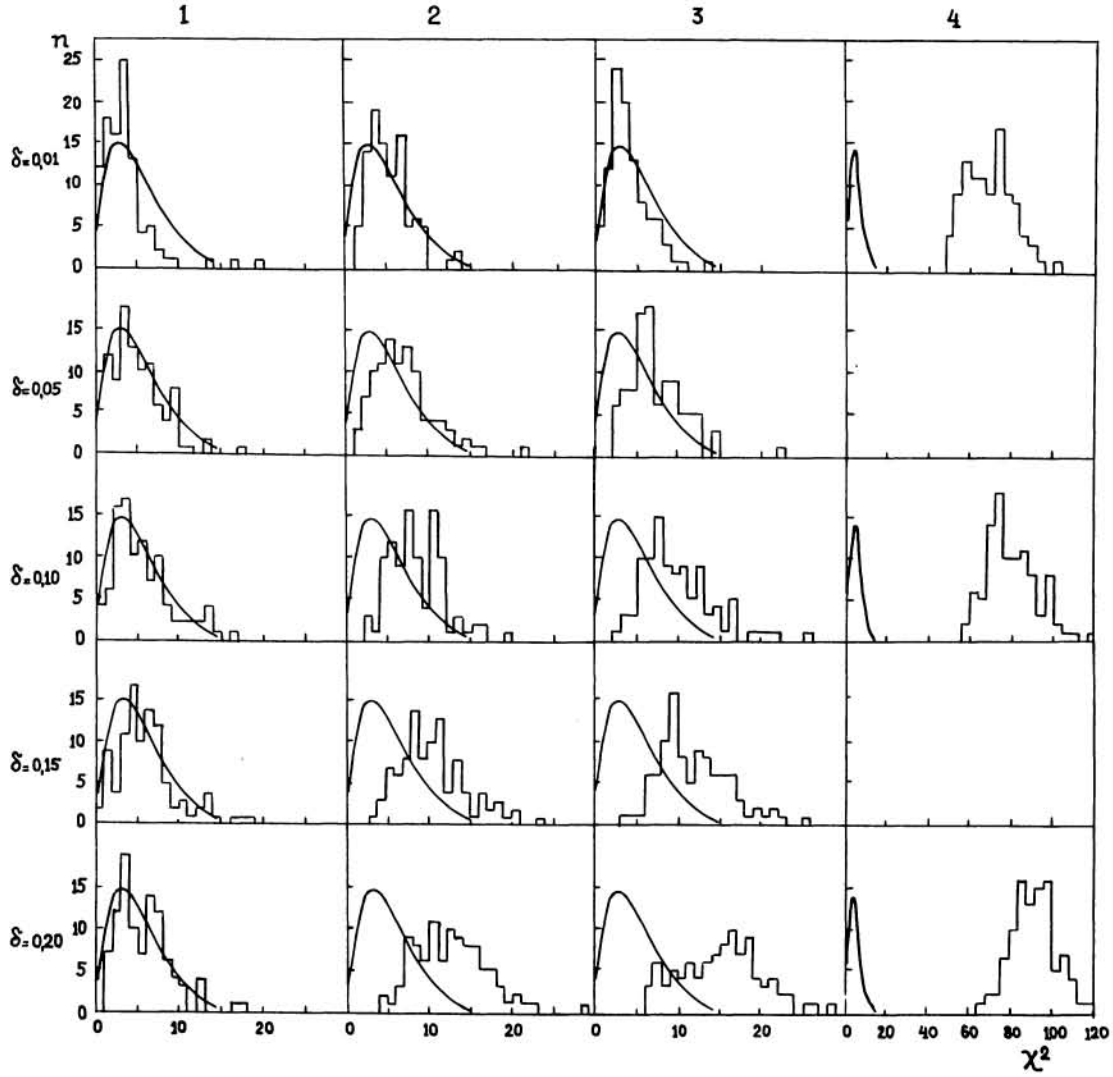


Fig. 1. Histograms of the chi-square values at different errors ( $\delta$ ) of exposure ages. Curves are the Poisson statistics. 1 - uniform distributed random numbers; 2 - L chondrites; 3 - random numbers imitating distribution of L chondrite ages (model distribution); 4 - H chondrites.