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Chen Yichao* (ycchen@hnu.edu.cn), Yu lu shan, Changsha, Hunan 410082, Peoples Rep of China. *Total embedding distributions for some types of graphs*. Preliminary report.

The total embedding distribution of a graph, including the non-orientable embeddings, is known for relatively few classes of graphs, compared to the genus distribution. A new usage of Chebyshev polynomials was found in the study of embedding distribution, using the overlap matrix, we obtain homogeneous (non-homogeneous) recurrence relation for rank distribution polynomial, which can be solved in terms of Chebyshev polynomials of the second kind. The explicit formula for embedding distribution of some well-known classes of graphs are obtained. A splitting theorem for embedding distributions is obtained and was used to calculate embedding distribution of generalized fan graphs. (Received September 08, 2011)