

The main task of this thesis was a statistical study of lion roar wave emissions in the Earth's magnetosheath. Large data set obtained from the Cluster spacecraft has been used. We have studied a frequency distribution, a wave power distribution and a spatial distribution. We have investigated propagation characteristics using advanced methods applied on multi-components measurement. We have confirmed the narrow-band structure of lion roars. We have compared observed and estimated (from the cold plasma theory) time lags between spacecraft during short separations.