sy subjects in the confidence probability $P<0.01$.

It can be seen from the numerical results as shown in Table 1 that the average DCCA value of epilepsy patients' EEG is greater than that of the normal subjects' EEG. It is particularly important to help clinical diagnosis.

Fluctuation range showed the self-similar characteristics become unstable when human brain EEG status developing from normal to epilepsy status.

After verification of large amounts of data, it can be achieved a helpful diagnostic method for to make difference between healthy subjects' and epilepsy subjects' EEG. 4 Conclusions

The paper appllied DCCA to analyze the α wave of EEG signals from healthy subjects and epilepsy subjects. It was found that the cross-correlation exists in normal subjects' EEG and the cross-correlation will decrease for the epilepsy patients' EEG. In clinical applications, doctors can check the DCCA value if it was in the normal EEG' DCCA range to determine if the epilepsy will occur.

3. Acknowledgements

This work was supported by the National Natural Science Foundation of China (Grant Nos. 61271082, 61201029, 61102094), the Natural Science Foundation of Jiangsu Province (Grant Nos. BK2011759, BK2011565) and Foundation of Nanjing University of Posts and Telecommunications (JG03212JX02, JG03210JX19, 2011XSG11).

4. References

[1] M.Campillo, A.Paul, "Long-range correlations in the diffuse seismic coda," *Science*, pp. 547-549, 2003.

[2] L.Laloux, P. Cizeau, J.-P. Bouchaud, M. Potters, "Noise dressing of financial correlation matrices," *Phys. Rev. Lett.*, pp.1467-1470, 1999.

[3] P.Samuelsson, E.V. Sukhorukov, M. Buttiker, "Orbital entanglement and violation of bell inequalities in mesoscopic conductors," *Phys. Rev. Lett.*, pp.157002, 2003.

[4] B. Podobnik, H.E. Stanley, "Detrended cross-correlation analysis: A new method for analyzing two nonstationary time series", *Phys. Rev. Lett.*, pp.084102, 2008.

[5] W.-X. Zhou, "Multifractal detrended cross-correlation analysis for two nonstationary signals," *Phys. Rev. E*, pp.066211, 2008.

[6] P.-A. Absil, R. Sepulchre, A. Bilge, P. Gerard, "Nonlinear analysis of cardiac rhythm fluctuations using DFA method,"*Physica A*, pp.235-244, 1999.