

theoretical interpretation of the 3 minute umbral oscillations. The proposed model has been investigated by calculating the transmission coefficients of the waves propagating through the umbral photosphere (photospheric weak-field cavity) and chromosphere (chromospheric strong-field cavity) into the corona, for 3 different umbral model atmosphere by Staude model (1982), Yun and Beebe model (1986) and Avrett model (1981).

The computed resonant periods, transmission spectra, phase spectra and kinetic energy density of the waves associated with the oscillations are presented in comparison with the observations and their model dependent characteristics are discussed.

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< 研究論文 >

Evolution of the Central Black Hole in an Active Galactic Nucleus

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We analyze the long term evolution of the central black hole in a 'semi-time-dependent' model of an active galactic nucleus, where the mass of the central black hole is being extracted by the Blandford-Znajek process. Assuming the accretion rate to be a constant leads to a conflict with observation. Consequently we suggest that the evolution of active galactic nuclei must be driven by a rapid decrease of the accretion rate, and that the evolution proceeds from QSOs to nuclei of Seyfert galaxies or radio galaxies. We also estimate the probable accretion rate evolution, and therefore, the probable evolution of the power output extracted from the magnetosphere of the central black hole by the Blandford-Znajek process, the total mass of the hole, and the magnetic field strength.

Radial Colour Gradient in 47 Tuc

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To find the reality of the radial colour gradient in 47 Tuc, we analyze the recent CCD data published by Hesser et al. (1987 preprint). Their F3/F4 data used for this work were in the range of $1' \sim 7'$ and contain stars brighter than $V=20$ mag. From these data we want to reproduce the radial integrated colour.

The result confirms the existence of an obvious radial change of the calculated B-V colour indices. This color gradient seems to come from the concentration of giant stars.