PAINEL 258

THE ANGULAR MOMENTUM OF STARS WITH PLANETS

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Rotation is one the most important observation in stellar astrophysics, in particular in stars with planets. This physical parameter, can teach us on the distribution of angular momentum in the planetary system, as well as on its role on the control of different phenomena, including coronal and cromospherical emission and on the extent of tidal effects. In spite of solid advances made on the study of the characteristics and properties of host planet stars, the main features of their rotational behavior is not yet well established. In this context, the present work brings an unprecedented study on the rotation and angular momentum of stars harbouring planets, as well as on the link between rotation and stellar and planetary physical properties. Our analysis is based on a sample of 232 extrasolar planets, orbiting 196 stars of different luminosity classes and spectral type. In addition to the study of their rotational behavior of the revisit also behavior of the physical properties of stars and their orbiting planets, including stellar mass and metallicity, as well as the planetary orbital parameters. As the major results we can underline that the rotation of star with planets present two clear features: stars with T_{ef} lower than about 6000 K are essentially slow rotator, whereas among stars with T_{ef}>6000 K we find moderate and fast rotators, despite a few exceptions of slow rotators. We show also that stars with planets follows mostly the Kraft´s law, namely $<J> \propto v_{rot}^{\alpha}$. In this same line we show that the rotation *versus* age relation of stars with planets follows, at least qualitatively, the Skumanich and Pace & Pasquini laws. The relation rotation *versus* orbital period also points for a very interesting result, with stars harbouring planets with shorter orbital period present rather enhanced rotation.

PAINEL 259

PLANETARY POPULATIONS ACCORDING TO THE ORBITAL ANGULAR MOMENTUM

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Very young stars have a large rotational velocity, in opposition to old stars for which the rotational velocity is considerably slower. This suggests that stars lose their angular momentum during their evolution. Indeed, stellar rotation studies in young stellar clusters point to that the stellar angular momentum loss occurs on a time scale less than 1 Gyr. The angular momentum loss seems to be associated with the interaction between the magnetic fields of the young star and the protoplanetary gas/disc. In our Solar System, most of the angular momentum is on the planets, although the Sun has some orders of magnitude more mass than the mass in all the planets of system. The typical interpretation of this phenomenon is that the Sun has lost angular momentum early in its life, transferring it to the circumsolar disk, where protoplanets were in formation. On this work, we investigate the angular momentum distribution of known exoplanetary systems, as a function of the planetary mass and orbital semimajor axis. We find that exoplanetary systems exhibit the same general trend of the Solar System, in the sense that the orbital angular momentum in the planets is larger than the spin angular momentum of the central star. Moreover, we have found that exoplanets seems to be classified according to at least two "populations´´, with respect to their angular momentum properties. These classifications are independent on the composition of the planet and seem to be found for both jovian and neptunian planets, as well for the terrestrial planets of the Solar System. We analyse these ´´populations´´ considering the phenomenon of planetary migration.

PAINEL 260

ABUNDANCES OF HEAVY ELEMENTS IN ATMOSPHERES OF THE STARS WITH EXTRASOLAR PLANETS

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A challenging and unexpected puzzle appeared with the discovery of exoplanets. A majority of the stars with planets (SWP) present an important excess of metallicity of the mean order of 0.25 dex. The source of this excess is however a matter of debate. Most of the nearly know SWP have received a detailed spectroscopic analysis only until the element Ni. The purpose of this work is to present a complete study of the heaviest elements (beyond Ni) present in two groups of stars, with and without planets. We carry out a detailed, homogeneous and uniform study of the abundances of Sr, Y, Zr, Ba, Ce and Nd using the equivalent widths method in both groups. We have plotted the results in the [X/H] vs. [Fe/H] and [X/Fe] vs. [Fe/H] planes. Preliminary results have shown that the abundance trends of planet-host stars are very similar to those of the comparison sample, i.e., we don't detect an over abundance as the presented in the Fe element.

PAINEL 261

DETERMINAÇÃO DA ÓRBITA DE EXOPLANETAS COM INFERÊNCIA ESTATÍSTICA

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Pela técnica das velocidade radiais (Vr) a órbita de exoplanetas fica determinada pelo ajuste da expressão analítica de Vr com as observações medidas e o caminho tradicional para isto é utilizando mínimos quadrados. Nesta comunicação, testamos uma maneira alternativa, baseada em inferência estatística, que é feita via Cadeias de Markov com Métodos de Monte Carlo (MCMC). A comparação de ambos os processos nos fornece resultados satisfatórios e visto a natureza não-gaussiana dos erros envolvidos, a vantagem na utilização de MCMC é que este nos fornece um método rigoroso para quantificar as incertezas nos parâmetros determinados.

PAINEL 262

A SEARCH FOR EXTRASOLAR PLANETS AROUND SUBGIANTS STARS

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We have recently started an unprecedented spectroscopic survey searching for extrasolar planets around subgiant stars. An unique sample of 190 bona-fide subgiants are now in observation with different instruments (CORALIE and HARPS at ESO/La Silla and SOPHIE at OHP). In the present work we show the behaviour of the physical properties of all the stars of the referred sample, computed on the basis of spectroscopic data obtained from the ESO Archive Science Facilities. Among these properties, we present the behaviour of the rotational velocity as a function of mass, age and metallicity. In addition, we analyze also the behaviour of the stellar angular momentum, which seems to follow the well established Kraft's relation. The distribution of the metallicity of stars located along the blue side $(B\text{-}V)<0.60$, and the red side, $(B\text{-}V)>0.60$, shows an unexpected result: Blue stars appear to be less metal-rich than the stars located on the red side.

PAINEL 263

DETERMINING THE MASS OF HD136118B WITH COMBINED ASTROMETRIC AND RADIAL VELOCITY DATA

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In the present work we determine the orbital inclination of HD 136118 b with Hubble Space Telescope Fine Guidance Sensor measurements, while at the the same time refining the orbital fit with additional high-cadence radial velocity measurements from the HRS at the Hobby-Eberly Telescope. By determining the orbital inclination i=26°±12° we are able to establish the actual mass of the companion as $M_p=28_{-9}^{+24} M_{Jup}$, in contrast to the previous $M_p \sin i$~12 M_{Jup}, we have established that the companion lies in the brown dwarf, not the planetary regime.