[S12-3] Spectroscopy of the Very Young Planetary Nebula IC 5117 using ESPaDOnS

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We report the dicsovery of Raman scatteredd He II by atomic hydrogen in the high resolution spectrum of the very compact and young planetary nebula IC~5117 obtained with the ESPaDOnS (Echelle Spectropolarimetric Device for the Observation of Stars) installed on the 3.6~m Canada-France-Hawaii Telescope. We obtain the Raman conversion efficiency of 0.34 in IC~5117. Under the assumption that the neutral scattering region fully covers the He~II emission region, we propose that the H~I column density of the scattering region is NHI = 4 X 10^21 cm-2. This is an order of magnitude larger than the value obtained from 21~cm observation by Taylor, Gussie \& Pottash. This inconsistency may be removed by adopting a higher excitation temperature THI=1000 K of the scattering H~I region by a factor of 10 than the value used for the interpretation of the 21~cm data.

[S13-1] CME Geoeffectiveness Depending on its Orientation and Sigmodial Shape

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Coronal mass ejections (CMEs) have been regarded as major solar disturbances of strong geomagnetic storms, especially when there exist southward components of the interplanetary magnetic field (IMF). In this study, we have examined the CME geoeffectiveness characterized by the Dst index according to the field orientation (N or S) and the sigmoidal shape (S or Inverse-S) of solar active regions. In determining the field orientation, we applied the coronal flux rope model and the force-free field model to the active regions producing 136 CME-ICME pairs from 1996 to 2001 by using Yohkoh/SXT and SOHO/MDI images. As a result, we present the contingency tables of the CME geoeffectiveness characterized by the field orientation and the sigmoidal shape. Most of statical parameters for the coronal flux rope model are much better than those for the force-free field model, supporting Pevtsov and Canfield (2001)'s results. It is interesting to note that probability of detection "yes"(PODy=0.94) for southward inverse-S shaped sigmoids is much larger than that (0.64) for S shaped sigmoids.