NO^+ FUNDAMENTAL AND FIRST HOT RO-VIBRATIONAL LINE FREQUENCIES FROM MIPAS/ENVISAT ATMOSPHERIC SPECTRA

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MIPAS (Michelson Interferometer for Passive Atmosphere Sounding) is a high spectral resolution interferometer (0.035 cm^{-1} unapodized) covering a very wide spectral range (from 4.16 to 16.4 cm^{-1}) with high sensitivity that was successfully launched on the 1st of March 2002 on the European Envisat satellite. MIPAS has measured spectra of the Earth's upper atmosphere in the 4.3 μm region with the highest spectral resolution ever reached in this altitude region. This high spectral resolution permitted to obtain the frequency position of ro-vibrational NO^+ transitions with an unprecedented accuracy. It has been found that the spectral line positions of the NO^+(1-0) ro-vibrational band are shifted by about -0.15 cm^{-1} with respect to those listed in the HITRAN 2004 compilation. Also, spectral line positions of the NO^+(2-1) ro-vibrational band are shifted by approximately -(0.05- 0.1) cm^{-1} with respect to those listed in the HITRAN 2004 compilation. A new set of Hamiltonian constants for NO^+ has been derived from MIPAS data which is suggested to be used in future HITRAN compilations.