



## Spitzer MIR spectroscopy of Neptune

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We present the first mid-infrared spectra of Neptune taken with the Spitzer Space Telescope. These data were taken in May and November of 2004 and provide complete longitudinal coverage in both epochs. These high S/N data span the spectral region 5.2 to 37  $\mu\text{m}$ , with a spectral resolution,  $R \sim 64\text{--}128$  in the range 5.2 - 15  $\mu\text{m}$ , and another set of data with  $R \sim 600$  in the range 10–37  $\mu\text{m}$ . In addition to verifying the previous ground-based and ISO detections of  $\text{CH}_4$ ,  $\text{C}_2\text{H}_2$ ,  $\text{C}_2\text{H}_4$ ,  $\text{C}_2\text{H}_6$ ,  $\text{CH}_3\text{D}$ ,  $\text{CH}_3$ ,  $\text{H}_2$ , and  $\text{CO}_2$ , we see a number of previously unidentified features, including one that we have tentatively identified with  $\text{C}_3\text{H}_4$ . We have a high S/N spectrum of the previously undetected spectral region between 5.2 and 7.3  $\mu\text{m}$ , which appears to be dominated by  $\text{CH}_4$  emission. Comparisons between the May and November observations show an apparent increase in  $\text{C}_2\text{H}_2$  emission relative to  $\text{C}_2\text{H}_6$  and  $\text{CH}_4$ .