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## Searching for signatures of X-ray induced chemistry in the spectra of exoplanetary atmospheres

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Stellar XUV radiation impacting on a planetary atmosphere leads chemistry out of equilibrium. In particular the outer layers are dominated by the ionization provided by the EUV component. Whereas X-rays, due to the small cross-section of the main atmospheric components, penetrate deeper in the atmosphere. Here the electrons produced by the ionization provided by X-rays have enough energy to produce further ionizations in their turn. The electrons, unlike from X-rays, are able to efficiently ionize molecular hydrogen giving rise to a characteristic chemistry. In particular the action of the electrons enhances the formation of molecules like C<sub>2</sub>H<sub>2</sub>, CH<sub>4</sub>, NH<sub>3</sub> and HCN. These molecules in the case of high stellar activity show intense spectral features that could allow the instrumentation of new generation to discriminate between an equilibrium and a non equilibrium chemistry .