

An excess of gamma rays has been observed in the Galactic center region by Fermi-LAT. In order to characterise these gamma rays accurate estimates of the diffuse galactic background are needed. We improve the determination of the component of the diffuse galactic background caused by cosmic rays colliding with neutral atomic hydrogen (HI). We account for both line and continuum emission in the radiation transport. This allows the modelling of negative line intensity and traces gas both in emission and absorption. We find Fermi-LAT templates generated from such a model provide an improved fit in comparison to templates generated from previous models which do not account for the continuum component.