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Structured photoionization continuum of cesium vapor GORAN PICHLER, YACOUB MAKDISI, JAHJA KOKAJ, NICKY THOMAS, JOSEPH MATHEW, Kuwait University, Physics Department, AMIP TEAM — We studied absorption spectrum of dense cesium vapor in an all-sapphire cell with a special emphasis on the highly structured photoionization continuum. This continuum appears to be composed of atomic and molecular contributions which can be separated by means of additional superheating of the sapphire cell. This was possible due to the small amount of cesium filling which completely evaporated at temperature of about 450 °C. This enabled the overheating of cesium dimers which almost disappeared at a temperature of 900 °C leaving pure atomic Cs vapor. The analysis of the thermal destruction indicated that the highly structured molecular component of the photoionization continuum can be entirely attributed to cesium dimers. We discuss the possible origin of the structured photoionization continuum as stemming from the absorption process from the ground Cs_2 molecule to the doubly excited Cs_2^{**} molecule located above the molecular ionization limit Cs_2^+. The corresponding potential curves are subjected to a mutual interactions and autoionization.

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