

Escape and Stand of the Pluto Atmosphere

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Abstract: Molar mass μ_{\min} of the lightest gas, which will exist "forever" in the atmosphere at the planet surface, can be evaluated by Jeans rule. The μ_{\min} of Pluto is $17.3 \text{ g}\cdot\text{mol}^{-1}$. It is evident that both N_2 and CO can be major atmospheric composition at the Pluto surface, and will exist "forever". CH_4 can only be escaping slowly from Pluto atmosphere, and still holds quite a proportion in current Pluto atmosphere. However, it will not escape from Titan (or Jupiter, Saturn) atmosphere largely, and will exist "forever". Given the quantity level of partial pressure of CH_4 in Pluto and Titan (or Jupiter, Saturn) original atmosphere is the same, it will be clear that the current partial pressure of CH_4 in Pluto surface atmosphere is 10^{-3} Pa .

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Key words: planet atmosphere, Pluto atmosphere, Jeans rule, atmospheric composition, escape

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