P120a **A Dynamically Collapsing Core and Precursor of a Core in a Filament**

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Filaments are ubiquitously seen in molecular clouds regardless of star formation activity, and their physical properties would give us a hint to assess subsequent protostar formation. In this context, we performed J =1–0 line observations of ^{12}CO, ^{13}CO, and C^{18}O molecules using the Nobeyama 45 m telescope to shed light on the physical properties of the natal filament around the cloud core harboring an exceptionally young low-mass protostar GF 9-2. The obtained maps, covering $\sim 1/5$ of the whole filament, clearly demonstrate that the core formed at the local density maxima of the filament, and the internal motions of the filament are governed by turbulence with Mach number of ~ 2. With an isothermal cylinder model, the scale height of the filament is estimated to be ~ 0.6 pc, yielding the central density of 10^3 cm^{-3}. The analysis shows that the filament is supported by turbulent pressure against self-gravity. Since both the dissipation time scale of the turbulence and the free-fall time of the filament gas are comparable to $\sim 10^6$ years, we conclude that the decay of the turbulence made the filament gas locally unstable, hence making the core collapse. Furthermore we newly detected a gas condensation with velocity width enhancement located at $\sim$0.3 pc south-west of the core. The condensation has an LTE mass of $\sim 5\ M_\odot$, and a turbulent velocity dispersion of ~ 0.6 km s^{-1}, suggesting a gravitationally bound state. We therefore speculate that the condensation is a precursor of a cloud core, which would be produced by cloud-cloud collision(s) of the two gas components identified in the filament.