The ^{26}Al yields in single stars

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The ground state of the unstable ^{26}Al nucleus (^{26}Al$_g$) with $t_{1/2} = 0.717$ Myr was the first radioisotope detected in the galaxy, via the characteristic 1.809 MeV γ-emission of ^{26}Mg [1]. The observation is direct proof of ongoing stellar nucleosynthesis in our Galaxy and indicates that there are approximately 2−3 $M_\odot$ of ^{26}Al$_g$ [2]. It is therefore fundamental to understand the yields of ^{26}Al$_g$. ^{26}Al has an isomeric state (^{26}Al$_m$) which is prohibited to decay into ^{26}Al$_g$ due to the large spin difference. However, an equilibration between ^{26}Al$_m$ and ^{26}Al$_g$ could proceed via intermediate states and influence the abundance of ^{26}Al$_g$ [3]. To clarify the production mechanism of ^{26}Al$_g$, we present our investigation of the sensitivity of the yields to variation of nuclear reaction rates involving ^{26}Al$_g$ and ^{26}Al$_m$ in single stars.

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