21 A distant star is receding from the Earth with a speed of $1.40 \times 10^{7}\,\text{m s}^{-1}$. It emits light of frequency $4.57 \times 10^{14}\,\text{Hz}$. The speed of light is $3.00 \times 10^{8}\,\text{m s}^{-1}$.

The Doppler effect formula can be used with light waves.

What will be the frequency of this light when detected on Earth?

A $2.04 \times 10^{13}\,\text{Hz}$

B $4.37 \times 10^{14}\,\text{Hz}$

C $4.57 \times 10^{14}\,\text{Hz}$

D $4.79 \times 10^{14}\,\text{Hz}$