The Star Formation of NGC 2024

Nagoya University Affiliated Upper Secondary School
55013

0. Introduction

Star Formation

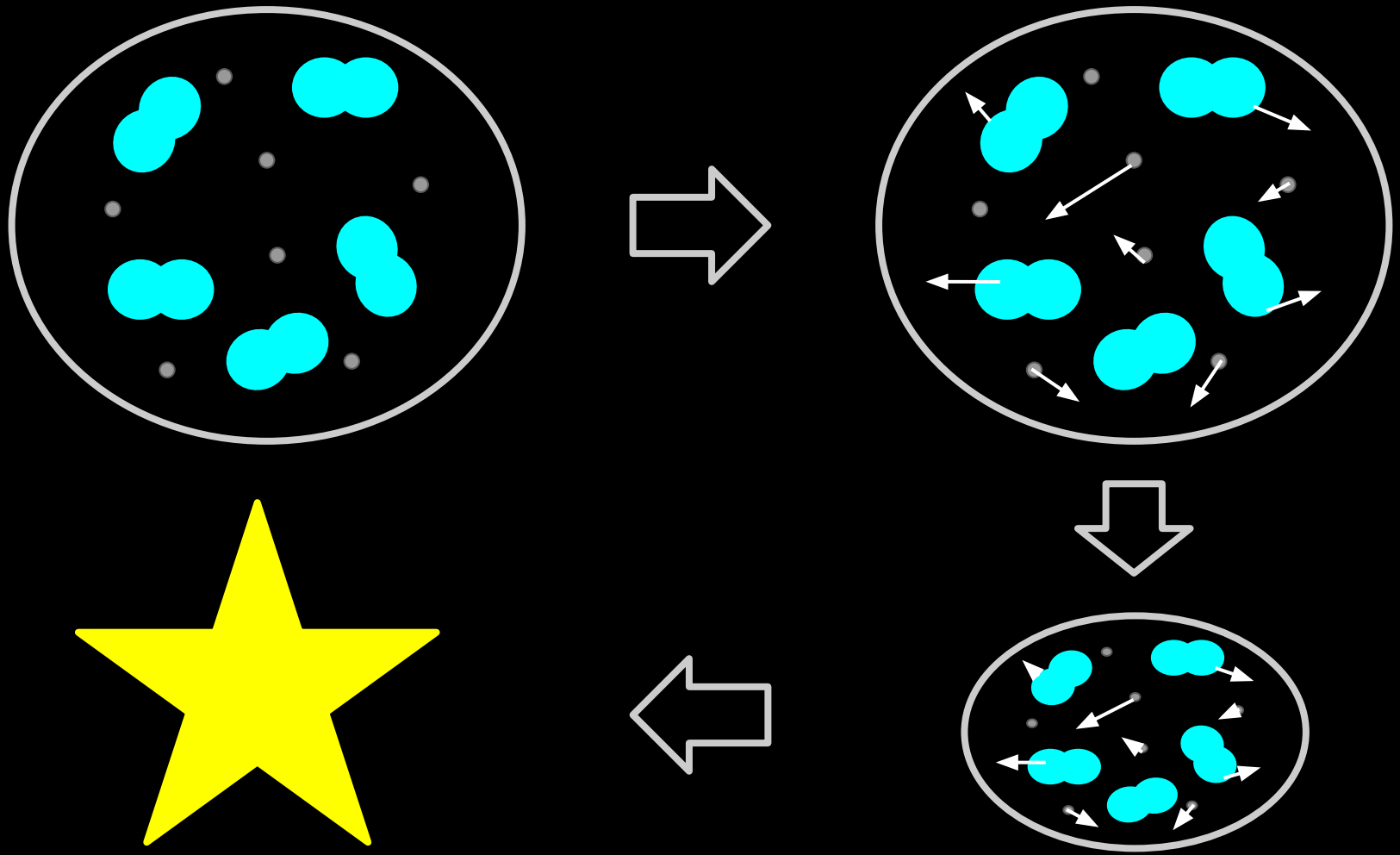
The processes of star forming and progress

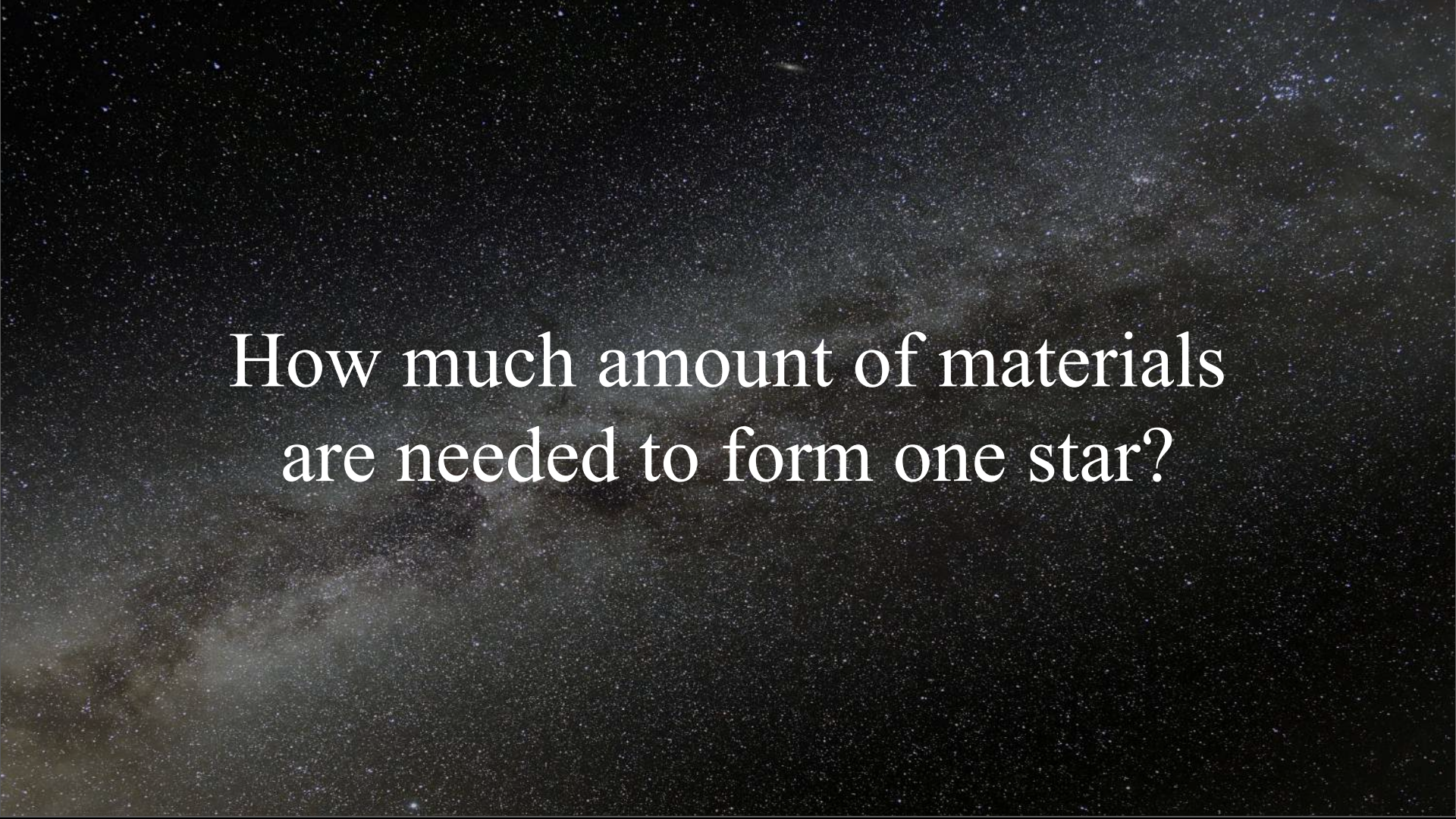
Unknown

- Process of star formation

  Generate energy

  → High efficiency, No emission of GHG




How much amount of materials
are needed to form one star?

1. Method

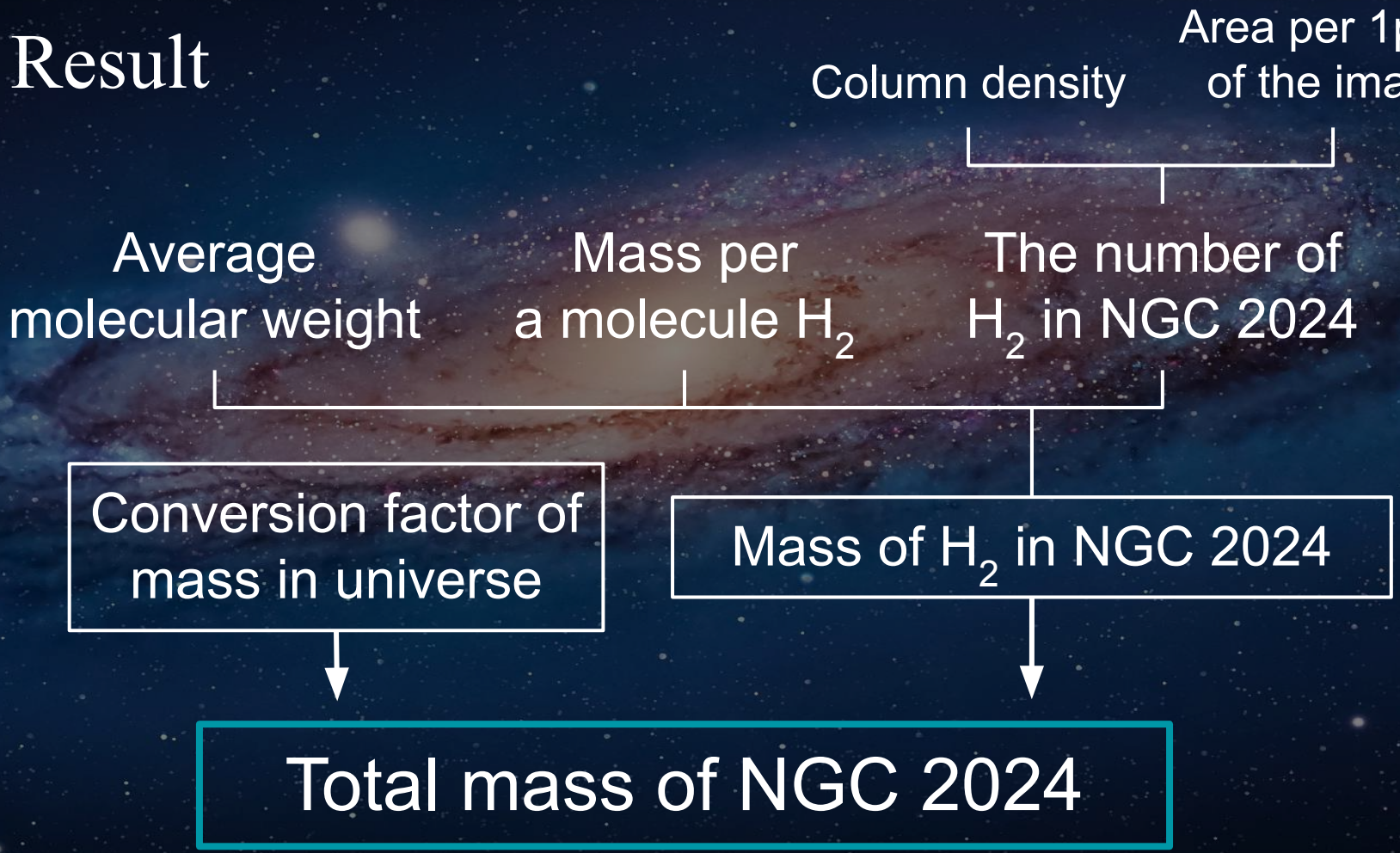
NGC 2024
- Molecular cloud
- H_2, CO, dust

Data
- Nobeyama 45m radio telescope

Database
- 2MASS infrared observation

Nobeyama 45m radio telescope

2. Result


Column density
Area per 1pixel of the image
Average molecular weight
Mass per a molecule H_2
The number of H_2 in NGC 2024
Conversion factor of mass in universe
Mass of H_2 in NGC 2024
Total mass of NGC 2024

2. Result

Number of young stars formed in NGC 2024

mass of one star

Total mass of NGC 2024

Total mass of young stars formed in NGC 2024

Star Formation Efficiency = 1.1%

2. Result

Avogadro constant

Average molecular weight

Total mass of NGC 2024

Number of molecules in NGC 2024

Volume of NGC 2024

Number Density of Molecules $= 1.8 \times 10^{4}$ cm^{-3}

3. Discussion

Form one star
- A large amount of gas
- High density

Is the star formation efficiency, 1.1% peculiar to NGC 2024?

What are the determinants of star formation efficiency?

4. Acknowledgement

We would like to appreciate
Mr. TACHIHARA Kengo from Graduate school of science in Nagoya University and
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Thank you for listening