

4

THRESHOLD

EARTH & THE SOLAR SYSTEM

Even after millions of supernovae exploded to create new elements, most of the Universe still consisted of hydrogen, helium, and empty space. Planets, which formed from leftover debris around newborn stars, contained much greater chemical complexity than anything else in the Universe. On rocky planets like our Earth, even more remarkable things could happen.

4.5

4 BILLION YEARS AGO

Billions of years after the Big Bang

1.1 1.3 1.5 1.7

4.5

4.60

4.55

4.50

4.45

4.40

4.35

4.30

4.25

4

THRESHOLD

EARTH & THE SOLAR SYSTEM

INGREDIENTS

New chemical
elements

Clouds of chemically
rich matter

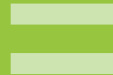
Newly forming stars



GOLDBLOCKS CONDITIONS

Gravity, accretion, and
random collisions

Create environments where
elements gather, combine, and form
chemical bonds



NEW COMPLEXITY

Astronomical bodies
more chemically rich
than stars

Planets

Planetesimals

Comets / asteroids

More complex structures

Our Solar System