

Modeling the Big Bang

Introduction/Background

The Big Bang is science's best explanation for how the universe began. According to the theory, the universe started out much hotter and much denser than it is today, and expanded and cooled over time. In the process, energy was also converted to matter.

Though the term may sound like the universe began with a giant explosion, many scientists say that's not part of the theory. An explosion implies that something exploded, or expanded, from one center point outward into space. In fact, the Big Bang theory suggests that space itself expanded. Our understanding of this event is based on evidence that we would expect to encounter in an expanding universe where everything is moving away from everything else.

Why are we doing this?/Activity Goals

This activity will use a slow-motion explosion as model for the Big Bang event. Models are a simplified version of a more complex reality. We commonly use models to help understand events that are too fast, too slow, too small or too big to observe directly. We will construct a model of the Big Bang – an event that occurred a long time ago over an incredibly large area – to help understand what evidence of the actual event might look like.

On your own: Watch the video of exploding items in super slow motion!

<https://www.youtube.com/watch?v=m7Paph37tcE>

Part A.

1. Imagine yourself in the middle of an explosion. Briefly answer the following questions individually:

- What would you sense (see, hear, feel, etc)?
- How would you know you were in an explosion?
- What evidence would help you understand that you're in the middle of an explosion?
- What measurements would support your understanding?

Place Answers into this Google Doc! ([responses to Big Bang modeling activity](#))