

Questions for study I (science)

The questions refer to the reading: Marcia Bartusiak, "Beyond the Big Bang", *National Geographic*, May 2005. Due: Tuesday, April 4.

1. Vocabulary question: What is a **galaxy**, anyway? How is it different from the **universe**? How is it different from a **star** or a **nebula**? How is it different from a **constellation**?

2. At the end of the first paragraph, Bartusiak states that Hubble and Humason discovered that "[t]he universe is swiftly expanding, carrying the galaxies outward." What was the prevailing (scientific) view of the universe *prior* to their discovery?

3. In the middle of the first text column on page 117, Bartusiak makes an analogy for the structure of **space-time** between the Earth and the Sun "as a rolling marble would circle around a bowling ball sitting in a trampoline." Find and either photocopy or print out an illustration of this point from a book, periodical or website. For books and periodicals, include the author, title of article (if appropriate), title of book or magazine, year or date of publication, and page number. For websites, include the author or sponsoring organization of the site, the URL and the last update date, if given. At this point in your academic career, avoid encyclopedias – find primary sources. This extends to avoiding Wikipedia. Make sure you are accessing the true website – no citations to sites beginning with "yahoo.com" or "google.com".

4. Why did Einstein call his invention of the **cosmological constant** “his biggest blunder”, according to Bartusiak? What is a **constant**, anyway, mathematically speaking, and what is a constant’s purpose?

5. What do modern astrophysicists think of the cosmological constant?