



News Blast it or paint it: Asteroid to threaten Earth in 2013

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To avert a possible catastrophe – this time set for February 2013 – scientists suggest confronting asteroid 2012 DA14 with either paint or big guns. The stickler is that time has long run out to build a spaceship to carry out the operation.

NASA's data shows the 60-meter asteroid, spotted by Spanish stargazers in February, will whistle by Earth in 11 months. Its trajectory will bring it within a hair's breadth of our planet, raising fears of a possible collision.

The asteroid, known as DA14, will pass by our planet in February 2013 at a distance of under 27,000 km (16,700 miles). This is closer than the geosynchronous orbit of some satellites.

There is a possibility the asteroid will collide with Earth, but further calculation is required to estimate the potential threat and work out how to avert possible disaster, NASA expert Dr. David Dunham told students at Moscow's University of Electronics and Mathematics (MIEM).

"The Earth's gravitational field will alter the asteroid's path significantly. Further scrupulous calculation is required to estimate the threat of collision," said Dr. Dunham, as transcribed by Russia's Izvestia. *"The asteroid may break into dozens of small pieces, or several large lumps may split from it and burn up in the atmosphere. The type of the asteroid and its mineral structure can be determined by spectral analysis. This will help predict its behavior in the atmosphere and what should be done to prevent the potential threat,"* said Dr. Dunham.

In the event of a collision, scientists have calculated that the energy released would equate to the destructive power of a thermo-nuclear bomb.

In response to the threat, scientists have come up with some ingenious methods to avert a potential disaster.

Fireworks and watercolors

With the asteroid zooming that low, it will be too late to do anything with it besides trying to predict its final destination and the consequences of impact.

Close-Approach Data ...sorted by Date/Time (TDB)					
Date/Time (TDB)	Time Uncertainty (days_HH:MM)	Body	Nominal Distance (AU)	Minimum Distance (AU)	Maximum Distance (AU)
1999-Aug-05 23:21	20:42	Earth	0.289817046189548	0.195599138047052	0.381649953441714
2000-Aug-08 11:52	21:17	Earth	0.222852539054421	0.137785981478257	0.302076348128345
2001-Aug-11 22:18	21:07	Earth	0.157739806494322	0.0839577886028594	0.223112203051563
2002-Aug-15 05:27	19:25	Earth	0.0959724350335936	0.0377832916019523	0.146157565572539
2003-Aug-18 04:51	14:13	Earth	0.0411301853786819	0.00884765315411873	0.0734342418415493
2004-Aug-19 11:01	01:32	Earth	0.00811394371252941	0.0080975981454012	0.00913342783076003
2004-Aug-19 12:06	02:23	Moon	0.00651509946961002	0.00639414574220144	0.00807530454821566
2005-Aug-21 15:45	02:03	Earth	0.0386011007305104	0.0340048974312737	0.0433282685411089
2006-Aug-24 16:54	01:49	Earth	0.0862956930645962	0.0820935866804886	0.0905445092288327
2007-Aug-29 13:43	01:39	Earth	0.137838686130345	0.134428992044418	0.141246112777273
2008-Apr-12 18:09	14:04	Earth	0.218782855316186	0.215923742528383	0.221640238739492
2008-Sep-13 15:35	02:46	Earth	0.190440744450549	0.188119527269252	0.19275569687003
2009-Feb-17 07:35	01:05	Earth	0.168843438160462	0.165162218261516	0.172489830903942
2010-Feb-14 10:03	00:04	Earth	0.114984152535048	0.112336107854566	0.117613832472378
2011-Feb-14 21:28	00:13	Earth	0.0632856135193912	0.0618201714919885	0.064744932935473
2012-Feb-16 06:10	< 00:01	Earth	0.0174310492441131	0.0173602793219341	0.0175017409545801
2013-Feb-15 19:26	00:25	Earth	0.000186680337109591	0.000181069371133235	0.00155143238998453
2013-Feb-15 22:58	12:32	Moon	0.00270793752071987	0.00261067405037311	0.00302073839410366

[Ephemeris | Orbit Diagram | Orbital Elements | Physical Parameters | Close-Approach]

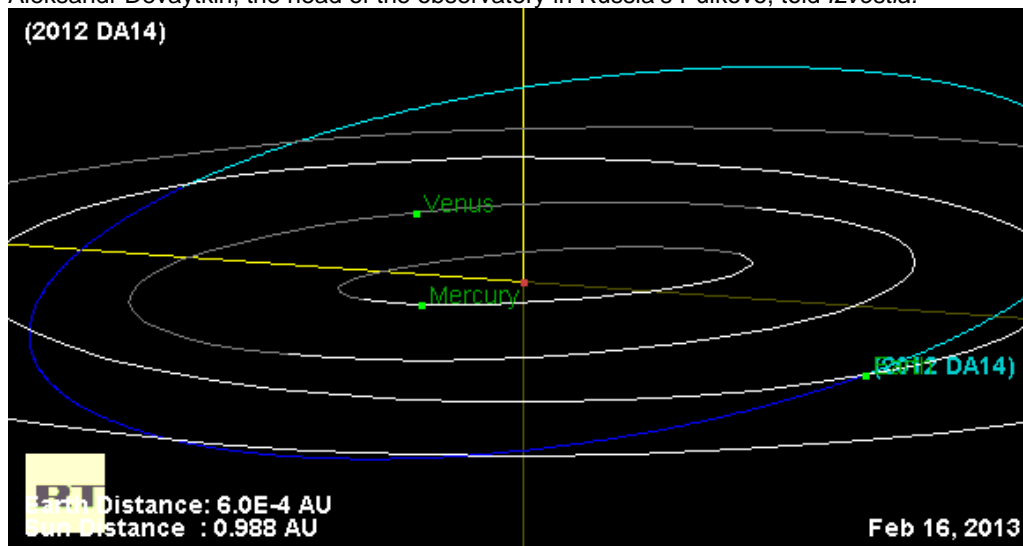
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A spaceship is needed, experts agree. It could shoot the rock down or just crash into it, either breaking the asteroid into debris or throwing it off course.

“We could paint it,” says NASA expert David Dunham.

Paint would affect the asteroid’s ability to reflect sunlight, changing its temperature and altering its spin. The asteroid would stalk off its current course, but this could also make the boulder even more dangerous when it comes back in 2056, Aleksandr Devaytkin, the head of the observatory in Russia’s Pulkovo, told *Izvestia*.



2012 DA14 orbit diagram

Spaceship impossible?

Whatever the mission, building a spaceship to deal with 2012 DA14 will take two years – at least.

The asteroid has proven a bitter discovery. It has been circling in orbit for three years already, crossing Earth's path several times, says space analyst Sergey Naroenkov from the Russian Academy of Sciences. It seems that spotting danger from outer space is still the area where mere chance reigns, while asteroid defense systems exist only in drafts.

Still, prospects of meeting 2012 DA14 are not all doom and gloom.

"The asteroid may split into pieces entering the atmosphere. In this case, most part of it will never reach the planet's surface," remarks Dunham.

But if the entire asteroid is to crash into the planet, the impact will be as hard as in the Tunguska blast, which in 1908 knocked down trees over a total area of 2,150 sq km (830 sq miles) in Siberia. This is almost the size of Luxembourg. In today's case, the destination of the asteroid is yet to be determined.

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