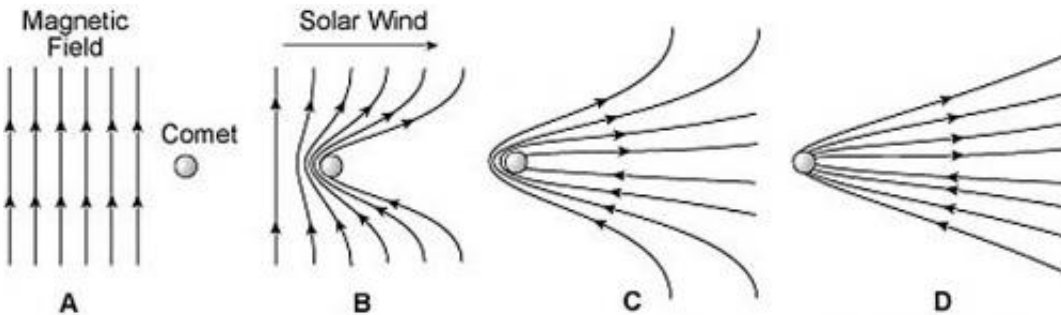


Rosetta's comet sings strange, seductive song

November 12 2014, by Bob King



Magnetic field lines bound up in the sun's wind pile up and drape around a comet's nucleus to shape the blue ion tail. Notice the oppositely-directed fields on the comet's backside. The top set points away from the comet; the bottom set toward. In strong wind gusts, the two can be squeezed together and reconnect, releasing energy that snaps off a comet's tail. Credit: Tufts University

Scientists can't figure exactly why yet, but Comet 67P/Churyumov-Gerasimenko has been singing since at least August. Listen to the video – what do you think? I hear a patter that sounds like frogs, purring and ping-pong balls. The song is being sung at a frequency of 40-50 millihertz, much lower than the 20 hertz – 20 kilohertz range of human hearing. Rosetta's magnetometer experiment first clearly picked up the sounds in August, when the spacecraft drew to within 62 miles (100 km) of the comet. To make them audible Rosetta scientists increased their pitch 10,000 times.

The sounds are thought to be oscillations in the [magnetic field](#) around the [comet](#). They were picked up by the Rosetta Plasma Consortium, a

suite of five instruments on the spacecraft devoted to observing interactions between the [solar plasma](#) and the comet's tenuous coma as well as the physical properties of the nucleus. A far cry from the stuff you donate at the local plasma center, plasma in physics is an [ionized gas](#). Ionized means the atoms in the gas have lost or gained an electron through heating or collisions to become positively or negatively charged ions. Common forms of plasma include the electric glow of neon signs, lightning and of course the Sun itself.

Having lost their neutrality, electric and magnetic fields can now affect the motion of particles in the plasma. Likewise, moving electrified particles affect the very magnetic field controlling them.

Scientists think that neutral gas particles from vaporizing ice shot into the coma become ionized under the action of ultraviolet light from the Sun. While the exact mechanism that creates the curious oscillations is still unknown, it might have something to do with the electrified atoms or ions interacting with the magnetic fields bundled with the Sun's everyday outpouring of [plasma](#) called the [solar wind](#). It's long been known that a comet's electrified or ionized gases present an obstacle to the solar wind, causing it to drape around the nucleus and shape the streamlined blue-tinted ion or gas tail.

"This is exciting because it is completely new to us. We did not expect this, and we are still working to understand the physics of what is happening," said Karl-Heinz Glassmeier, head of Space Physics and Space Sensorics at the Technical University of Braunschweig, Germany.

While 67P C-G's song probably won't make the Top 40, we might listen to it just as we would any other piece of music to learn what message is being communicated.

Source: [Universe Today](#)

Citation: Rosetta's comet sings strange, seductive song (2014, November 12) retrieved 10 April 2024 from <https://phys.org/news/2014-11-rosetta-comet-strange-seductive-song.html>

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