rings, like a series tree rings. Each ring is a separate Beltrami force-free plasma vortex.

Within the first vortex, which alone has no ring within it, the fluid flow, or in this case, plasma flow, begins parallel to the axis of the cylinder. At a greater cylindrical radius, the flow begins to spiral. The pitch angle of this spiral increases with the radius of the cylindrical layer that one is observing until it reaches 90°. At that point, the flow is a simple circle, always at right angles to the axis of the cylinder.

For ordinary fluid Beltrami flows, a second vortex forms outside of this last flow layer of the first vortex. And in this case, the pitch angle of the flow decreases for each cylindrical layer at a greater radius, with an overall direction opposite to that of the first vortex. That is, the second vortex's flow is opposite to the first, for ordinary fluids. This can continue until a flow layer forms which has a zero pitch angle and a flow which is parallel once again to the axis of the cylinder. A third vortex can form and follow the pattern of the first vortex in flow configuration, and so on.

In the case of a magnetic plasma, the magnetic and electric fields are directed along the same directions as the fluid flow. Furthermore, the fluid flow does not change its overall direction as one proceeds from an interior to an exterior ring. Instead, only the direction of the magnetic field changes. This is the reason why the planets orbit the Sun in the same direction. The relative placement of these plasma vortex rings from the central cylindrical axis gives the same values as the relative orbits of the planets. The relative average fluid flow in each vortex around the cylindrical axis gives approximately the same relative value as that found for each of the average velocities of the planets orbiting around the Sun. Furthermore, the change of the direction of the magnetic field, relative to the fluid flow, for each successive vortex ring, gives a physical basis for the variation in the magnetic field strengths observed by satellites for each of the planets.

The overall stability of the solar system follows from the plasma theory, since each of the plasma vortices is in its most stable state, according to the Wells minimum energy theory.

Pistol Star: the biggest and the brightest

NASA announced on Oct. 8, 1997 that the Hubble Space Telescope had found that one of the intrinsically brightest stars in our galaxy appears as the bright white dot in the center of the image shown here. Hubble's Near Infrared Camera and Multi-Object Spectrometer (NICMOS) was needed to take the picture, because the star is hidden at the galactic center, behind obscuring dust. NICMOS's infrared vision penetrated the dust to reveal the star, which is glowing with the radiance of 10 million suns.

The image also shows one of the most massive stellar eruptions ever seen in space. The radiant star has enough raw power to blow off two expanding shells of gas equal to the mass of several of our suns. The largest shell is so big—four light years across—that it would stretch nearly all the way from our Sun to the next nearest star, Alpha Centauri. The outbursts seen by Hubble are estimated to be only 4,000 and 6,000 years old, respectively.

Despite such a regular and large rate of mass loss, astronomers estimate that the extraordinary star may presently be 100 times more massive than our Sun, and may have started with as much as 200 solar masses of material, but it is violently shedding much of its mass.

In an Oct. 8 *New York Times* article, Drs. Don Figer and Mark Morris of the University of California at Los Angeles, the scientists who directed this Hubble discovery, report that the Pistol Star is so massive that it brings into question current thinking about how stars are formed. The standard model says that stars take shape within huge dust clouds when interstellar gases contract under their own gravity, eventually condensing into hot clumps that ignite the hydrogen fusion reaction. This standard theory precludes the existence of stars with a mass as large as that of Pistol, since the fusion reaction rates would produce a pressure far greater than that of the self-gravitational condensation, causing the star to explode.