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Feynman's angular momentum paradox revisited BEN YU-KUANG HU, BRIAN LOEBER, The University of Akron — We reexamine Feynman's angular momentum paradox, in which a cylinder of charge around a current carrying solenoid is set in rotational motion when the current is turned off (due to the induced electric field caused by the change in magnetic flux), apparently violating conservation of angular momentum. The standard explanation of the resolution of this paradox is that, when the electric current in the solenoid is on, the combination of the magnetic field from the current and the electric field from the charges results in non-zero angular momentum which is stored in the electromagnetic fields in the vicinity of the solenoid. This angular momentum is transferred to the charged cylinder when the current is turned off. However, we show that for certain geometries of the solenoid and position of the charges, the angular momentum in the vicinity of the solenoid is in fact **zero** even when the solenoid carries electric current and hence magnetic field is present in the vicinity of the solenoid. We show that angular momentum is in fact still conserved, because the electromagnetic fields which radiate outwards from the solenoid after the current is turned off carry angular momentum which is opposite to the direction of the angular momentum imparted to the charge on the cylinder.

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