Motion of a ball rolling on a turntable BENJAMIN CARTER, No Company Provided — I reconsider the classical problem of a ball rolling on a perfectly rough, horizontal turntable. Previous treatments dating back to the 19th century assumed that the turntable has fixed angular velocity, in which case the ball's orbits turn out to be circular. I assume instead that the turntable has a finite moment of inertia, so that its angular velocity varies as it exchanges angular momentum with the ball. Numerical results support a conjecture of mine, which is that the ball's orbits are conic sections whose foci are collinear with the center of rotation. If my conjecture is true, then the equations of motion can be solved exactly.

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