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Design of Barrel´s Cam Curve Profile Using B-Spline Curves

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Abstract: One of the biggest challenges the cam designer faces up is to find the equation that satisfies de timing diagram for a movement in a cam. There are several ways to get a model for a curve like Simple Harmonic Motion (SHM), Modified Trapezoidal Acceleration, Polynomial Functions, etc. This kind of equations works under some conditions of velocity and acceleration, but in the interval of its movement it can present erratic behavior because those equations are not allowed to control the discontinuities of acceleration or jerk. Getting forward in this problem this paper proposes the use of B-Spline curves to obtain the displacement function for a barrel cam, because its characteristics of local control give it an advantage over other families of curves. The methodology to build B-Splines curves is analyzed from the analytical point and then we use the software Dynacam to get the SVAJ diagram getting a shape of cam in real time. The results obtained were imported to Solid Works, reducing the time it takes to get a shape of a cam.

Keywords: B-Spline, Local Control, Jerk.