

8.4: Higher Derivatives

Occasionally one may have a use for higher derivatives of position with respect to time. The time derivative of acceleration is called jerk, and the time derivative of jerk is called jounce. One published paper ¹ whimsically named the fourth, fifth, and sixth derivatives of x "snap", "crackle", and "pop" after the cartoon characters on boxes of Rice Krispies[®] breakfast cereal.

We will seldom, if ever, have need of these higher-order derivatives of x for this course, but for reference, they are summarized in Table 8.4.1.

Table 8.4.1. Time derivatives of position.

Derivative	Symbol	Name
0	x	position
1	dx/dt	velocity
2	d^2x/dt^2	acceleration
3	d^3x/dt^3	jerk
4	d^4x/dt^4	jounce, snap
5	d^5x/dt^5	crackle
6	d^6x/dt^6	pop

1. Visser, Matt. Jerk, Snap, and the Cosmological Equation of State. *Classical and Quantum Gravity*, 21 (11): 2603-2616.

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