TRACKMAN
BASEBALL

Glossary of Terms

Terms are listed in the default order in which they appear upon exporting a CSV from the TrackMan Baseball game tracking software.

Pitch Tagging

1. **PitchNo** — Sequential ordering of all pitches in the game
2. **Date** — Date of release of ball from pitcher's hand (local time)
3. **Time** — Time of release of ball from pitcher's hand (local time)
4. **PAofInning** — Indication of the batting order of the half inning where the first batter of the inning is assigned a 1, the second batter a 2, etc.
5. **PitchofPA** — Indication of the pitch of the plate appearance whereby the first pitch of the at bat is assigned a 1, the second pitch a 2, etc.
6. **Pitcher** — Name of pitcher
7. **PitcherId** — MLBAM ID of pitcher
8. **PitcherThrows** — Handedness of pitcher (Left or Right)
9. **PitcherTeam** — Team that pitcher plays for (abbreviated)
10. **Batter** — Name of batter
11. **BatterId** — MLBAM ID of batter
12. **BatterSide** — Side of plate batter is hitting from during at bat (Left or Right)
13. **BatterTeam** — Team that batter plays for (abbreviated)
14. **PitcherSet** — Indication of whether a pitcher is throwing from the windup or set, as tagged by system operator

15. **Inning** — Inning pitch is thrown in
16. **Top/Bottom** — Indication of top (home team pitching) or bottom (home team batting) of inning
17. **Outs** — Indication of the number of outs before the pitch is thrown
18. **Balls** — Indication of the number of balls in the count before the pitch is thrown
19. **Strikes** — Indication of the number of strikes in the count before the pitch is thrown
20. **TaggedPitchType** — Pitch classification (fastball, curveball, etc.) selected manually by system operator
21. **AutoPitchType** — Pitch classification (fastball, curveball, etc.) automatically suggested by TrackMan, based on the pitch's speed (relative to that pitcher's max speed), spin rate, spin axis, and amount of break
22. **PitchCall** — Indication of:
    - Strike [called, swinging];
    - Ball [called, intentional]; (pitchout is considered an intentional ball)
    - Hit by Pitch;
    - Foul, or;
    - In Play.
23. **KorBB** — Indication of 3rd strike or 4th ball of an at bat
24. **HitType** — Classification of hit (e.g., Fly Ball, Ground Ball) selected manually by system operator

    Note: A pop up is defined as a ball hit high in the air that is caught or could have been caught by an infielder. A fly ball is a ball hit high in the air that is caught or could have been caught by an outfielder.

25. **PlayResult** —
    - Single;

- Double;
- Triple;
- Homerun;
- Reached on Error;
- Fielder's Choice (No Out Recorded);
- Out;
- Sacrifice;
- Undefined (if ball is not put In Play)

26. **OutsonPlay** — Number of outs recorded on that pitch (0, 1, 2, or 3)
27. **RunsScored** — Number of runs scored on that pitch
28. **Notes** — Comments entered by system operator

Pitch Tracking

29. **RelSpeed** — Speed of pitch, reported in miles per hour, when it leaves the pitcher's hand
30. **VertRelAngle** — Initial vertical (up-down) direction of the ball when it leaves the pitcher's hand, reported in degrees. A positive number means the ball is released upward, while a negative number means the ball is released downward
31. **HorzRelAngle** — Initial horizontal (left-right) direction of the ball when it leaves the pitcher's hand, reported in degrees. A positive number means the ball is released to the right from the pitcher's perspective, while a negative number means the ball is released to the left from the pitcher's perspective.

32. **SpinRate** — How fast the ball is spinning as it leaves the pitcher's hand, reported in the number of times the pitched ball would spin per minute ("revolutions per minute" or "rpm")
33. **SpinAxis** — Direction the ball is spinning, reported in degrees of tilt. Note that:
    a. A ball thrown with a spin axis of 0 has pure top spin. The top of the ball is moving away from the pitcher and the bottom of the ball is moving away from the batter. This is a classic "12-6" curveball. This kind of spin will cause the ball to drop more than gravity would cause alone.
    b. A ball thrown with a spin axis of 180 has pure backspin and is a classic four seam fastball, with the top of the ball moving towards the pitcher and the bottom of the ball moving toward the batter. This kind of spin will cause the ball to drop less that gravity would cause alone.
    c. A ball thrown with a spin axis of 90 is spinning squarely toward the left, from the pitcher's perspective (and would create a break to the left), while a ball thrown with a spin axis of 270 is spinning squarely toward the right, from the pitcher's perspective (and would create a break to the right).

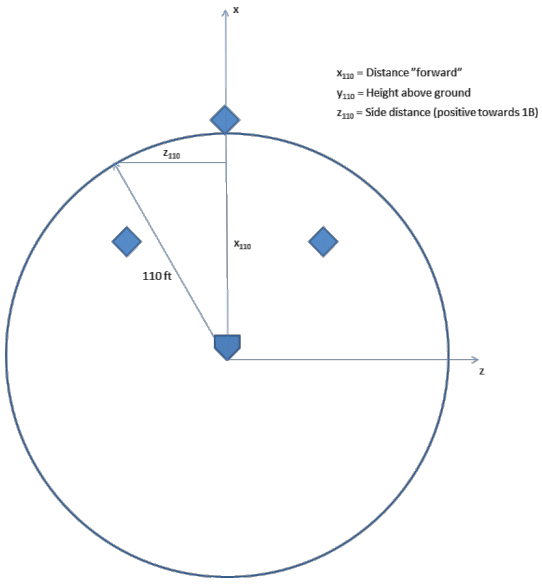
34. **Tilt** — Spin axis converted into clock time, rounded to the nearest 15 minutes. As a rule of thumb, the ball will break in the direction of the number on the clock face. For example:
    a. 6:00 is perfect top spin (classic "12 – 6" curveball), causing the ball to break down
    b. 12:00 is perfect back spin (Four seam fastball, with no left-right movement), causing the ball to break upward relative to how it would have moved due to gravity alone – cutters are around 11:00 and sinkers are around 2:00 for a RHP, while cutters are around 1:00 and sinkers around 10:00 for a LHP.
    c. 3:00 is a "Frisbee" spinning and breaking to the right, while 9:00 is a "Frisbee" spinning and breaking to the left.
35. **RelHeight** — Height, reported in feet, above home plate at which the pitcher releases the ball.
36. **RelSide** — Distance from the center of the rubber, reported in feet, at which the pitcher releases the ball. Balls thrown from the right side of the mound from the pitcher's perspective will have a positive number, and balls thrown from the left side of the mound from the pitcher's perspective have a negative number
37. **Extension** — The distance, reported in feet, from which the pitcher releases the ball relative to the pitching rubber.
38. **VertBreak** — Distance, measured in inches, between where the pitch actually crosses the front of home plate height-wise, and where it would have crossed home plate height-wise if had it traveled in a perfectly straight line from release, completely unaffected by gravity.
    Note: This number will be quite large for pitches released with a positive vertical release angle
39. **InducedVerticalBreak** — Distance, measured in inches, between where the pitch actually crosses the front of home plate height-wise, and where it would have crossed home plate height-wise if had it traveled in a perfectly straight line from release, but affected by gravity.

Note: If this number is positive, the ball broke “upwards”, or in reality dropped less than it would have due to gravity alone – it does not necessarily mean that the ball actually rose

40. **HorzBreak** — Distance, measured in inches, between where the pitch actually crosses the front of home plate side-wise, and where it would have crossed home plate side-wise if had it traveled in a perfectly straight line from release. A positive number means the break was to the right from the pitcher’s perspective, while a negative number means the break was to the left from the pitcher’s perspective
41. **PlateLocHeight** — The height of the ball relative to home plate, measured in feet, as the ball crosses the front of the plate
42. **PlateLocSide** — Distance from the center of the plate to the ball, measured in feet, as it crosses the front of the plate. Negative numbers are to the left of center from the pitcher’s perspective (outside to a right handed batter). Positive numbers to the right of center from the pitcher’s perspective (inside to a right handed batter)
43. **ZoneSpeed** — Speed of the pitch, measured in miles per hour, as it crosses the front of home plate
44. **VertApprAngle** — How steeply up or down the ball enters the zone, reported as the angle in degrees, as the pitch crosses the front of home plate. A negative number means it is sloping downward, while a positive number (rare) means it is sloping upward
45. **HorzApprAngle** — Left-right direction at which a pitched ball crosses the front of home plate, reported as an angle. A negative number means that the ball is moving from right to left from the pitcher’s perspective (away from a right handed batter) as it enters the zone, and a positive number means that the ball is moving from left to right from the pitcher’s perspective (in on a right handed batter) as it enters the zone

46. **ZoneTime** — Amount of time elapsed from pitcher's release until it crosses the front of home plate. Also, may be referred to as "batter reaction time".
47. **ExitSpeed** — The speed of the ball, measured in miles per hour, as it comes off the bat at the moment of contact
48. **Angle** — How steeply up or down the ball leaves the bat, reported as an angle. A positive number means the ball is initially traveling upward, while a negative number means the ball is initially traveling downward
49. **Direction** — Left-right (horizontal) direction in which the ball leaves the bat, reported as an angle. A negative number represents a ball initially traveling toward the third base side of second base while a positive number represents a ball initially traveling toward the first base side
50. **HitSpinRate** — How fast the ball is spinning as it leaves the bat, reported in the number of times the hit ball would spin per minute ("revolutions per minute" or "rpm")
51. **PositionAt110X**: The distance forward (in feet) that a batted ball travels before it lands, or would have landed if it were not caught or obstructed at a 110 foot distance away from home plate.
52. **PositionAt110Y**: The height of a batted ball (in feet) when it crosses the plane of 110 feet away from home plate horizontally.
53. **Position At110Z**: The left-right position (in feet) when it crosses the plane of 110 feet away from home plate horizontally.

Graphic Depiction of Position at 110X, 110Y, 110Z



54. **Distance** — The estimated "carry flat" distance, measured in feet, meaning the distance that the ball travels before it lands, or would have landed if it were not caught or obstructed
55. **LastTrackedDistance** — The distance, measured in feet, that the radar actually tracks the ball. In some cases, the radar tracks the ball only for a portion of the hit trajectory and in this case the remaining part of the trajectory is estimated by the software using a ball flight model. This means that the Distance and Bearing reported by TrackMan is partially estimated and can have a reduced accuracy.
56. **Bearing** — Indicates where on the field the ball lands or would have landed, had it not been caught or obstructed. It is reported in degrees relative to home plate. A bearing of 0 degrees means the ball landed on a straight line from home through second base. A positive number means the ball landed on the first base side, while a negative number means the ball landed on the third base side.

57. **Hangtime** — Amount of time, measured in seconds, elapsed from when the ball hits the bat until the ball lands or would have landed, had it not been caught or obstructed.
58. **pfxx** — The horizontal (left-right) movement of the pitch during the last 40 feet before the front of home plate, as compared to a theoretical pitch thrown at the same speed with no spin-induced movement.

    Note: Unlike the Horizontal Break number above, this movement is from the batter's perspective, meaning positive numbers break toward the 1B side, while negative numbers break to the 3B side
59. **pfxz** — The vertical (up-down) movement of the pitch during the last 40 feet before the front of home plate, as compared to a theoretical pitch thrown at the same speed with no spin-induced movement
60. **x0** — The horizontal (left-right) location of the pitch 50 feet before the front of home plate. Positive numbers are toward the 1B side, while negative numbers are toward the 3B side, relative to a straight line drawn from the tip of home plate to the center of the rubber
61. **y0** — The distance from home plate, along a straight line drawn from the tip of home plate to the center of the rubber, 50 feet before the front of home plate. By definition this will always be 50 feet
62. **z0** — The height of the pitch, relative to home plate, 50 feet before the front of home plate.
63. **vx0** — The velocity (speed) of the pitch in the left-right direction, 50 feet before the front of home plate
64. **vy0** — The velocity (speed) of the pitch in the direction toward home plate, 50 feet before the front of home plate
65. **vz0** — The velocity (speed) of the pitch in the up-down direction, 50 feet before the front of home plate

66. **ax0** — The acceleration (how much speed is changing) of the pitch in the left-right direction, 50 feet before the front of home plate
67. **ay0** — The acceleration (how much speed is changing) of the pitch in the direction toward home plate, 50 feet before the front of home plate
68. **az0** — The acceleration (how much speed is changing) of the pitch in the up-down direction, 50 feet before the front of home plate
69. **HomeTeam** — The designated home team in the game.
70. **AwayTeam** — The designated away team in the game.
71. **Stadium** — Venue that game is taking place in.
72. **Level** — Level of play associated with game.
73. **League** — League affiliated with the game. In the case of interleague play, or minor league playoffs, the league will default to the home team.
74. **GameID** — Unique ID associated with game.
75. **PitchUID** — A unique identifier for each pitch in the TrackMan database

Additional Pitch Tracking (optional)

76. **EffectiveVelo** — Given the actual velocity and extension of the pitch, Effective Velocity is a measure of the velocity that the pitch would have had to be released at, if the pitcher had an extension that was equal to the average extension of Major League Baseball pitchers. If the

actual extension is shorter than the MLB average, the Effective Velocity is lower than the actual velocity, and if the extension is longer, the Effective Velocity is higher than the actual velocity.

77. **MaxHeight** — The apex, in feet, of the trajectory of a batted ball.
78. **MeasuredDuration** — The amount of time, in seconds, that a batted ball's trajectory is measured by the radar, starting at the moment of contact with the bat.
79. **SpeedDrop** — The difference, in miles per hour, of RelSpeed and ZoneSpeed.
80. **ContactPositionX** — The position at which the ball was contacted by the bat on the X-axis, in feet, relative to the tip of home plate, with the tip of home plate at 0. Measurements in front of the tip of home plate are positive and behind the tip of home plate are negative.
81. **ContactPositionY** — The position at which the ball was contacted by the bat on the Y-axis, in feet. The Y-axis represents the height of the ball relative to home plate, with the flat ground being 0, and everything above the ground being positive.
82. **ContactPositionZ** — The position at which the ball was contacted by the bat on the Z-axis, in feet. The Z-axis runs parallel to the front edge of home plate, with the origin being the tip of home plate, positive being the 1st base side of the field and negative on the 3rd base side (i.e., the width of the field, in feet, with the tip of home plate at 0.