# Basic Instructions For Using the Tool

## Part 1: Pitch Arsenal

* This is built off the pure Rapsodo data with some minor changes
* All Horizontal Break Figures have been reversed to ensure the movement corresponds with catchers perspective
* BU is Bauer Units, or Spin/Velocity
  + This shows how well an individual spins a ball relative to their velocity
  + Helps to put pitchers at varying levels on a path that allows us to compare them
* Move\_Angle is the angle at which the pitch is moving relative to the numbers shown on Rapsodo
  + These figures shown correspond to movement against what a perfectly straight ball would experience
  + This also helps to place pitchers on similar scales since velocity and a number of other factors can influence the overall amount of movement
  + 90 Degrees means all of the movement in the pitch is vertical (see chart below for understanding this better)

## Part 2: Whiff Rate Charts

* For all fastballs thrown in the MLB I determined the BU and Move\_Angle
* Using each individuals handedness and their Spin/Movement profile I found similar pitches and plotted the whiff rates dependent on location
* Each pitcher will see how same handed hitters and opposite handed hitters fared on pitches similar to theirs
* *\*\*I will be creating similar charts plotting Slugging or BA\*\**
* Since location is the easiest thing to change quickly to see results this should be helpful in determining where to best attack hitters with fastballs
* Again entirely from perspective of the catcher

## Part 3: Pitch Design

* *\*\*This is the section that currently needs the most work/tweaking\*\**
* For each player I found the 50 most similar pitchers in terms of fastball spin/movement
* Then for each of those pitchers, I found relevant data points for five other pitch types: Two Seam, Cutter, Slider, Change-Up, Curveball
* I added the Whiffs/Swing and wOBA data for their individual pitches
* This is to show what the rest of the arsenal looks like for pitchers who have similar fastballs
* Here is the process I would undergo to use this:
  + Pick a pitcher and see what his current arsenal looks like
  + Select pitch you want to work with
  + Determine what the goal of that pitch design is going to be
    - Whiffs or poor contact
  + Find the pitches in the list that best align with that goal
  + See where your current metrics compare to the best pitches for your goal
  + Try to figure out what you need to do in order to make your best match that one
  + One of the best ways to do this is to use Baseball Savant and other online resources to see how that pitcher releases his pitch.
  + You can do research on grips or try to find pictures that can help point you in the right direct
  + Pitch design is an inexact science and certain pitches and ideas work better for certain people
  + There is no one singular perfect slider/change-up/etc
  + Generally

## Basic Model Showing The Angles For Move\_Angle

90

-90

0

180/-180