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Since the 7.0 update, ZAir has been a decent combo and kill confirm tool for Young Link. There are however inconsistencies with launch animations and angles that are worth investigating.

Methodology: I tested this on Mario, move stalling off, no DI. Likely percentage per character matters, and it's likely LSI has some impact as well. I tested every 5%, and repeated 20 times to see the possible types of animations were at that percent. Finally, to figure out the likelihood of a particular animation at a specific percent, I repeated 100 times.

TL;DR: At tumble percent (71%+ on Mario), you can get 3 different ZAir animations. They seem equivalent in terms of launch angle, first active frame and tech timings, but lead to inconsistent hurtbox positions. You have 25-30% chance of getting on that favors grounded follow-ups and 70-75% chance of getting one of two that favors aerial follow-ups. Affects different characters to a different degree so further investigation is necessary.

No Tumble Percents

In the percentage range where ZAir doesn't put the opponent into tumble, **0 % to 70% for Mario**, there seems to be only a single animation when Mario is hit by ZAir:

Early Tumble Percents

From 71% onwards, Mario is sent into tumble from ZAir. From 71% to 94%, there are then two, basically equivalent animations. They send at the same angle and are techable:

In 100 attempts at 71%, I got animation A 72 times and animation B 28 times. Not that it matters too much. From doing ~20 repetitions at various percentages in this window, the percent chance of A and B doesn't seem to change drastically.

Animation A (70-75% chance):

Animation B (25-30% chance):

High Tumble Percents

Starting at exactly 95% on Mario, a third, spin-out animation is added, animation C:

- **Animation A, B and C are possible 95% onwards. In 100 attempts at 95%, I got animation A 67 times, animation B 5 times and animation C 28 times.** It seems like the spinout animation largely replaces animation B, but you can still get it. I tried quickly at various percentages up to 130% and percent chance seems to be roughly the same as damage increases.
- **All animations have the same amount of hitstun, with FAF at frame 40,** with the first frame being when ZAir hits Mario. Mario is not forced in a tech situation.
- **All animations lead to Mario hitting the ground on frame 47.** At 130%, all animations result in Mario hitting the ground frame 49.
- **All launch angles appear the same according to the visual aid, 38 degrees.**

Back Hit

There is only one animation when hitting someone's back with ZAir back, tech or not:

Hurtbox Shifting

While there is no apparent difference in the core properties of each animation, it's hard to deny significant hurtbox position differences between the two animations. For example on Cloud, a DTilt followup seems much more consistent on the spin-off animation than the standard animation, while a DAir follow up is a lot easier on standard animation.. In some cases, it may be worth reacting to the animation with a different followup, but that will have to be determined on a case-by-case basis; For Mario, there was not much of a difference, for Cloud, the difference is quite obvious.
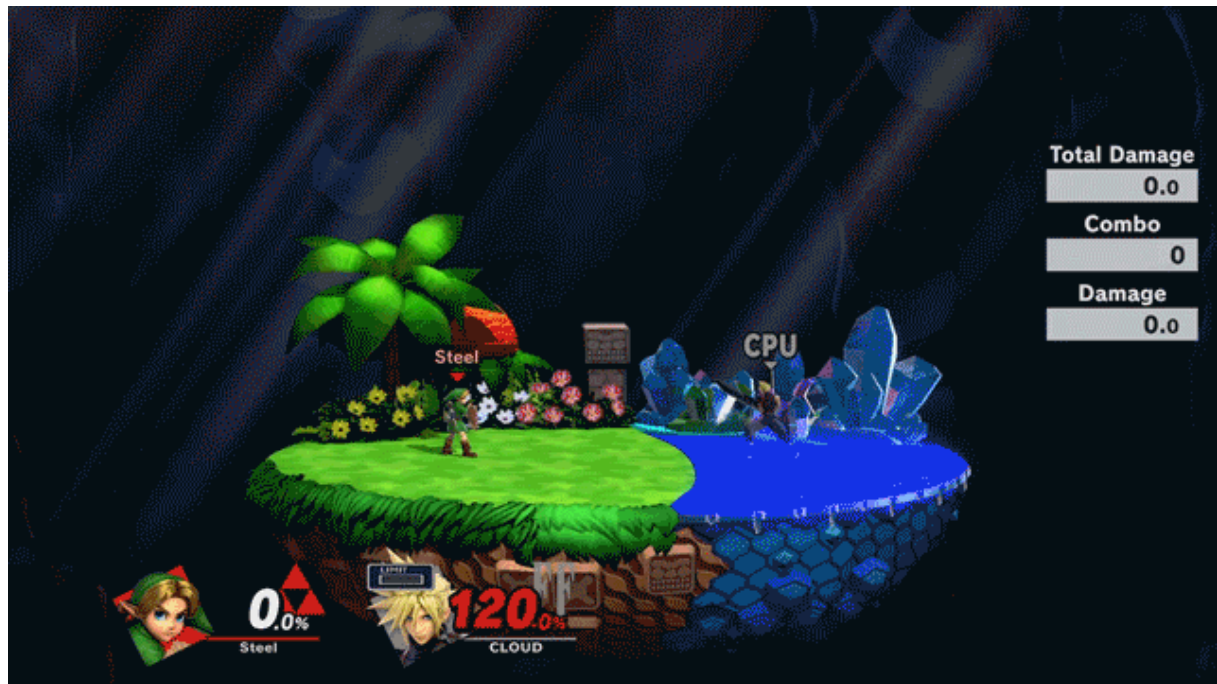
Summary, Conclusion and Future Work

At tumble percent, there are 3 animations you can get out of ZAir. They are mostly equivalent, all are techable, have the same hitstun and tech timing. The main difference is how the opponents' hurt boxes are shifting during these animations; spin-off animation is different from the other two and seems more easy to hit with moves like DTilt as more of the opponent's body is close to the ground. The other animation is more susceptible to aerial attacks (FAir, DAir) as the animation is more of a headfirst dive while the body is higher up in the air.

There's no apparent mechanic for the resulting animation, it seems entirely random. There's only one ZAir hitbox and where you hit the opponent on their body doesn't seem to determine their launch trajectory, other than front or back hit. It remains to be seen if LSI and DI affect these properties. It will also have to be determined on a case by case basis how much hurtbox shifting there is between animations. At first glance, it seems most significant for tall, thin characters.