

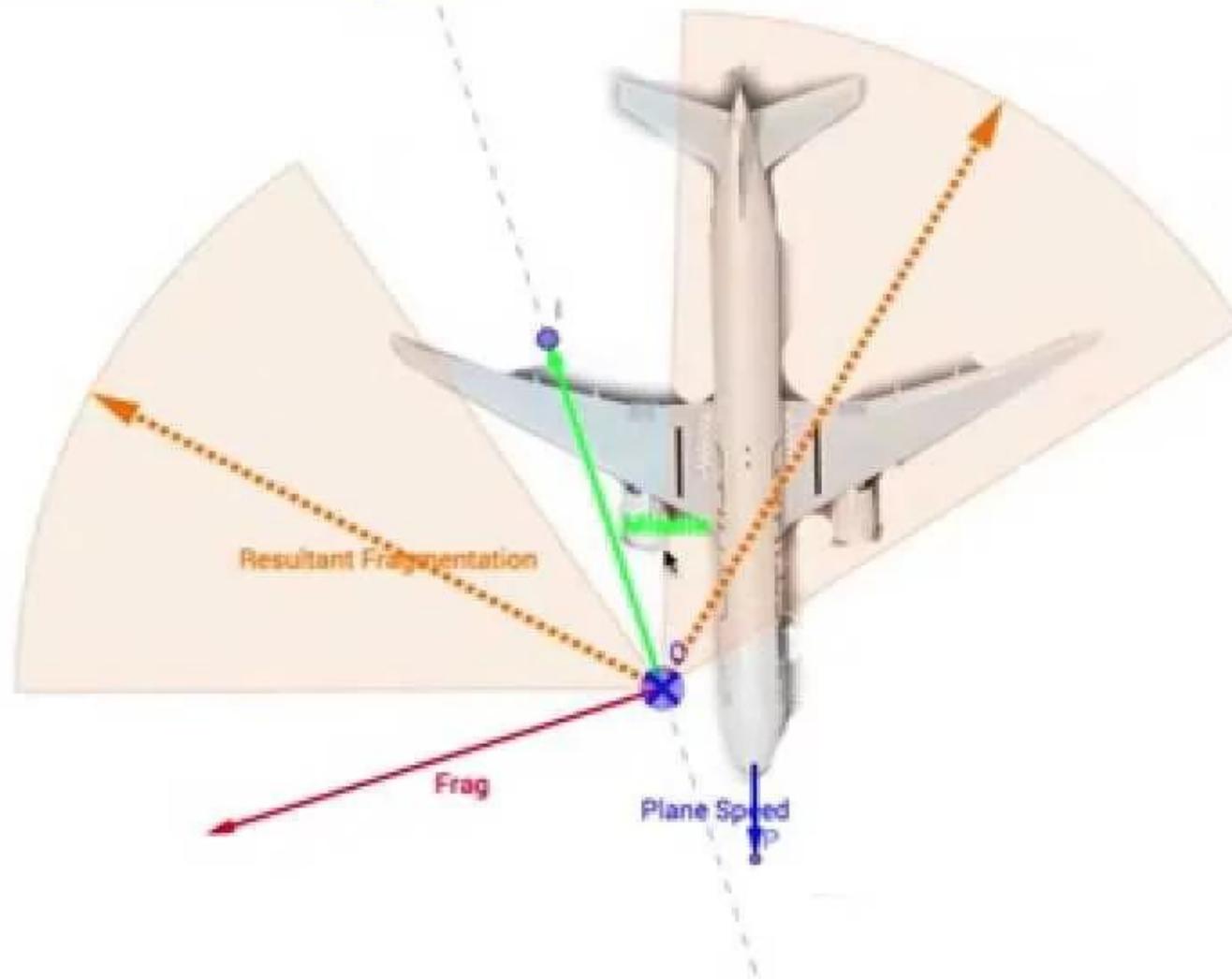
Plane/Missile Intersect Simulator. Metabunk.org

Plane Speed = 252 m/s (252 m/s = 490 knots)

Missile Speed = 1000 m/s

Frag Speed = 1290 m/s

Result Speed = 1736.42 m/s



1
00:00:05,690 --> 00:00:03,050
this is a simulation of a fragmentation

2
00:00:08,870 --> 00:00:05,700
warhead on a missile exploding near a

3
00:00:11,959 --> 00:00:08,880
plane the idea is that we then look at

4
00:00:13,490 --> 00:00:11,969
where the fragmentation goes based on

5
00:00:18,910 --> 00:00:13,500
the speed of the missile must be to the

6
00:00:22,460 --> 00:00:18,920
plane and the speed of the fragmentation

7
00:00:24,200 --> 00:00:22,470
the dotted line here indicates the

8
00:00:26,179 --> 00:00:24,210
pattern of the missile we can move that

9
00:00:29,060 --> 00:00:26,189
by grabbing this handle here and

10
00:00:30,980 --> 00:00:29,070
rotating it around so we can share

11
00:00:33,380 --> 00:00:30,990
different trajectories of the missile

12
00:00:35,660 --> 00:00:33,390
and this point here indicates where the

13
00:00:38,030 --> 00:00:35,670

missile exploded relative to the plane

14

00:00:41,810 --> 00:00:38,040

and of course we can move that around to

15

00:00:43,280 --> 00:00:41,820

show different scenarios with missile

16

00:00:46,940 --> 00:00:43,290

coming from one direction or another

17

00:00:49,369 --> 00:00:46,950

direction other things we can modify our

18

00:00:51,979 --> 00:00:49,379

the speed of the missile which is set to

19

00:00:54,740 --> 00:00:51,989

1,000 meters per second by default we

20

00:00:57,020 --> 00:00:54,750

can move it up to 1,500 the

21

00:01:00,080 --> 00:00:57,030

fragmentation speed which we can modify

22

00:01:03,969 --> 00:01:00,090

as you see when we modify these speeds

23

00:01:08,830 --> 00:01:03,979

it modifies the pattern of fragmentation

24

00:01:10,880 --> 00:01:08,840

from the from the warhead now the

25

00:01:13,480 --> 00:01:10,890

determination of this fragmentation

26
00:01:17,450 --> 00:01:13,490
pattern is done by adding together the

27
00:01:19,160 --> 00:01:17,460
velocity of the missile and the velocity

28
00:01:20,870 --> 00:01:19,170
of the fragmentation and then

29
00:01:22,910 --> 00:01:20,880
subtracting the speed of the plane

30
00:01:25,640 --> 00:01:22,920
because we need to get the motion

31
00:01:30,410 --> 00:01:25,650
relative to the plane so you can see

32
00:01:31,670 --> 00:01:30,420
where the bits of shrapnel would impact

33
00:01:34,910 --> 00:01:31,680
the plane and whether they would

34
00:01:36,350 --> 00:01:34,920
possibly exit the plane we can also

35
00:01:39,100 --> 00:01:36,360
adjust the speed of the plane but I said

36
00:01:41,780 --> 00:01:39,110
it's 250 2 meters per second which is

37
00:01:46,969 --> 00:01:41,790
419 knots which is the last recorded

38
00:01:49,730 --> 00:01:46,979

speed of light mh17 I'm also using a 777

39

00:01:51,950 --> 00:01:49,740

as the background graphic here so you

40

00:01:54,499 --> 00:01:51,960

can see where it might impact things

41

00:01:59,149 --> 00:01:54,509

like the engines and the tail you'll

42

00:02:01,340 --> 00:01:59,159

notice that even though the primary

43

00:02:03,889 --> 00:02:01,350

damage is round here in the front of the

44

00:02:05,719 --> 00:02:03,899

plane we do we even with this simple

45

00:02:07,580 --> 00:02:05,729

setup quite a bit of damage in the wing

46

00:02:11,390 --> 00:02:07,590

and a bit on the tail as well it doesn't

47

00:02:13,210 --> 00:02:11,400

take very much to modify the spread of

48

00:02:16,330 --> 00:02:13,220

fragmentation so that the entire

49

00:02:18,220 --> 00:02:16,340

plain is covered or if we rotate the

50

00:02:21,400 --> 00:02:18,230

angle around we can get different

51
00:02:23,230 --> 00:02:21,410
results and moving the the point of

52
00:02:26,230 --> 00:02:23,240
impact and every waiting on the other

53
00:02:31,120 --> 00:02:26,240
side we can we can see similar different

54
00:02:32,980 --> 00:02:31,130
things the unknowns here are basically

55
00:02:34,870 --> 00:02:32,990
what is the fragmentation speed of the

56
00:02:37,450 --> 00:02:34,880
warhead you can see quite a bit of

57
00:02:39,490 --> 00:02:37,460
difference with different speeds what

58
00:02:42,100 --> 00:02:39,500
was the speed of the missile was it

59
00:02:44,260 --> 00:02:42,110
1,000 meters per second closing speed or

60
00:02:46,630 --> 00:02:44,270
was it perhaps just 750 meters per

61
00:02:48,760 --> 00:02:46,640
second with a relative speed of a

62
00:02:51,340 --> 00:02:48,770
thousand and what's the spread actually

63
00:02:55,410 --> 00:02:51,350

56 degrees as some people suggested or

64

00:02:58,630 --> 00:02:55,420

was it a a higher value or a lower value

65

00:03:00,580 --> 00:02:58,640

but this allows you to very quickly try

66

00:03:02,980 --> 00:03:00,590

out different numbers and see what the

67

00:03:04,150 --> 00:03:02,990

resultant damage pattern might be now

68

00:03:08,440 --> 00:03:04,160

one thing to remember is that this is

69

00:03:10,510 --> 00:03:08,450

just two dimensional the real explosive

70

00:03:13,840 --> 00:03:10,520

explosion pattern is it can have a two

71

00:03:18,130 --> 00:03:13,850

dimensional expanding donut which will

72

00:03:19,900 --> 00:03:18,140

be essentially like a cone shape but

73

00:03:23,170 --> 00:03:19,910

this will give you a good idea around

74

00:03:25,030 --> 00:03:23,180

this region because essentially just a

75

00:03:29,800 --> 00:03:25,040

slice through that donut which you will

76

00:03:31,960 --> 00:03:29,810

see here and in other places too the