

CLASSIFIED



1
00:00:03,990 --> 00:00:02,710
so in this video here i've described the

2
00:00:07,510 --> 00:00:04,000
shape of this

3
00:00:08,870 --> 00:00:07,520
saucer shaped thing as being a glare a

4
00:00:10,549 --> 00:00:08,880
rotating glare

5
00:00:11,990 --> 00:00:10,559
now i realize that a lot of people have

6
00:00:13,669 --> 00:00:12,000
just kind of misunderstood what i

7
00:00:14,470 --> 00:00:13,679
actually mean by glare some people think

8
00:00:16,310 --> 00:00:14,480
i mean

9
00:00:17,590 --> 00:00:16,320
a lens flare some people think i just

10
00:00:19,429 --> 00:00:17,600
mean the aura around

11
00:00:20,950 --> 00:00:19,439
the uh the dark object but now i

12
00:00:23,429 --> 00:00:20,960
actually mean the

13
00:00:25,349 --> 00:00:23,439

dark object itself is in fact a glare

14

00:00:27,029 --> 00:00:25,359

now this image is inverted so what

15

00:00:28,790 --> 00:00:27,039

we're actually seeing is a bright light

16

00:00:31,990 --> 00:00:28,800

so what is a glare well a glare

17

00:00:35,350 --> 00:00:32,000

is this this here

18

00:00:37,430 --> 00:00:35,360

is a glare this thing over here

19

00:00:39,910 --> 00:00:37,440

uh it's not a glare this is a lens flare

20

00:00:42,549 --> 00:00:39,920

this little thing that's moving around

21

00:00:43,430 --> 00:00:42,559

is a lens flare this is a reflection the

22

00:00:45,750 --> 00:00:43,440

glare

23

00:00:46,470 --> 00:00:45,760

is what we see around the light and what

24

00:00:48,549 --> 00:00:46,480

we're seeing

25

00:00:50,069 --> 00:00:48,559

is a very very bright light and we're

26

00:00:51,430 --> 00:00:50,079

seeing the light kind of spilling out

27

00:00:53,110 --> 00:00:51,440

around it because it's just simply

28

00:00:54,790 --> 00:00:53,120

scattering a little bit in the lens and

29

00:00:56,229 --> 00:00:54,800

in the optical system and

30

00:00:58,150 --> 00:00:56,239

whatever it's going through through the

31

00:00:59,029 --> 00:00:58,160

aperture and it kind of spreads out a

32

00:01:00,389 --> 00:00:59,039

bit

33

00:01:02,549 --> 00:01:00,399

this light is actually spreading out

34

00:01:04,149 --> 00:01:02,559

everywhere my fingers here have the same

35

00:01:05,750 --> 00:01:04,159

light spreading out around them because

36

00:01:07,270 --> 00:01:05,760

they're not particularly bright

37

00:01:09,270 --> 00:01:07,280

you don't see anything but when you get

38

00:01:12,149 --> 00:01:09,280

a very very bright light the spreading

39

00:01:14,870 --> 00:01:12,159

in the optical system is just kind of

40

00:01:16,950 --> 00:01:14,880

becomes visible because the middle bit

41

00:01:19,109 --> 00:01:16,960

is very very overexposed and you just

42

00:01:21,749 --> 00:01:19,119

see the bright light around it

43

00:01:22,789 --> 00:01:21,759

so people think that uh i'm referring to

44

00:01:24,870 --> 00:01:22,799

a flare i'm not

45

00:01:26,070 --> 00:01:24,880

reflecting to a glare there's other

46

00:01:28,070 --> 00:01:26,080

types of glare that people talk

47

00:01:29,670 --> 00:01:28,080

about and uh they might get confused by

48

00:01:31,270 --> 00:01:29,680

those like the glare

49

00:01:32,870 --> 00:01:31,280

in photography that people talk about

50

00:01:33,830 --> 00:01:32,880

most is when people have some some

51
00:01:36,469 --> 00:01:33,840
glasses

52
00:01:37,670 --> 00:01:36,479
and you see these reflections coming off

53
00:01:40,230 --> 00:01:37,680
the glasses and that's

54
00:01:41,270 --> 00:01:40,240
that's described as being glare which

55
00:01:43,350 --> 00:01:41,280
you know it is it's a

56
00:01:45,590 --> 00:01:43,360
perfectly valid term for that people

57
00:01:47,670 --> 00:01:45,600
also talk about the glare coming off

58
00:01:49,510 --> 00:01:47,680
say a wet road from from street lights

59
00:01:51,190 --> 00:01:49,520
and you see like you know here's

60
00:01:53,590 --> 00:01:51,200
here's some water and here's like a

61
00:01:53,990 --> 00:01:53,600
light uh that's reflecting off the water

62
00:01:55,109 --> 00:01:54,000
surface

63
00:01:56,709 --> 00:01:55,119

and what you're seeing on the water

64

00:01:57,990 --> 00:01:56,719

surface is you know i guess you could

65

00:01:59,270 --> 00:01:58,000

describe that as glare

66

00:02:01,670 --> 00:01:59,280

but it's not what i'm talking about here

67

00:02:05,190 --> 00:02:01,680

what i'm talking about very specifically

68

00:02:07,109 --> 00:02:05,200

is this uh area of light

69

00:02:08,869 --> 00:02:07,119

around a bright light that's larger than

70

00:02:10,229 --> 00:02:08,879

the light itself see you can't actually

71

00:02:11,670 --> 00:02:10,239

see the flashlight

72

00:02:13,589 --> 00:02:11,680

turn off the flashlight this is how big

73

00:02:14,550 --> 00:02:13,599

it is i move my hand behind it so you

74

00:02:17,510 --> 00:02:14,560

can see it

75

00:02:18,630 --> 00:02:17,520

and then i turn it back on the glare is

76

00:02:20,390 --> 00:02:18,640

actually bigger than the entire

77

00:02:22,229 --> 00:02:20,400

flashlight so it's obscuring the whole

78

00:02:24,229 --> 00:02:22,239

thing and i think that's what's going on

79

00:02:25,750 --> 00:02:24,239

uh with the gimbal video the you're

80

00:02:27,670 --> 00:02:25,760

getting this glare

81

00:02:29,190 --> 00:02:27,680

it's bigger than the entire object and

82

00:02:31,030 --> 00:02:29,200

it's covering up the whole

83

00:02:32,710 --> 00:02:31,040

whole object and again what we're seeing

84

00:02:35,910 --> 00:02:32,720

is a very very bright light

85

00:02:37,190 --> 00:02:35,920

now with the gimbal it's infrared and so

86

00:02:38,869 --> 00:02:37,200

we're not really seeing

87

00:02:41,110 --> 00:02:38,879

visible light we're seeing infrared

88

00:02:42,869 --> 00:02:41,120

light and kind of medium to far i'm not

89

00:02:44,790 --> 00:02:42,879

sure exactly what wavelength it is

90

00:02:46,309 --> 00:02:44,800

but it's it's essentially it's the same

91

00:02:47,270 --> 00:02:46,319

thing it's radiation it's going through

92

00:02:48,869 --> 00:02:47,280

the optical system

93

00:02:50,949 --> 00:02:48,879

and so it kind of spreads out a little

94

00:02:53,670 --> 00:02:50,959

bit as it goes for various things

95

00:02:54,309 --> 00:02:53,680

now in the the affluer system is using

96

00:02:56,710 --> 00:02:54,319

mirrors

97

00:02:57,990 --> 00:02:56,720

uh more than it's using lenses it still

98

00:03:00,550 --> 00:02:58,000

uses lenses

99

00:03:01,509 --> 00:03:00,560

uh so the the glare is kind of a

100

00:03:03,110 --> 00:03:01,519

different character

101
00:03:05,190 --> 00:03:03,120
it doesn't perhaps have all these

102
00:03:06,470 --> 00:03:05,200
strange sprites spikes and everything to

103
00:03:07,910 --> 00:03:06,480
the same degree

104
00:03:09,190 --> 00:03:07,920
it does actually have spikes you can see

105
00:03:11,270 --> 00:03:09,200
them up and down left and right but you

106
00:03:13,350 --> 00:03:11,280
know we'll get to that in a minute

107
00:03:14,390 --> 00:03:13,360
uh what are the types of glider we have

108
00:03:14,790 --> 00:03:14,400
there's another type of glare that's

109
00:03:17,509 --> 00:03:14,800
called

110
00:03:19,110 --> 00:03:17,519
veiling glare now veiling glare happens

111
00:03:22,550 --> 00:03:19,120
when you have uh something like the sun

112
00:03:24,869 --> 00:03:22,560
shining on uh the camera but

113
00:03:25,589 --> 00:03:24,879

it's off camera off to the side but you

114

00:03:29,110 --> 00:03:25,599

still get

115

00:03:30,470 --> 00:03:29,120

this this uh kind of dimming not being a

116

00:03:32,309 --> 00:03:30,480

kind of a

117

00:03:33,589 --> 00:03:32,319

haziness around the image you can't

118

00:03:35,990 --> 00:03:33,599

actually see the bright light

119

00:03:38,229 --> 00:03:36,000

but because it's shining in the camera

120

00:03:41,270 --> 00:03:38,239

it reflects and bounces around

121

00:03:41,830 --> 00:03:41,280

and you see this this uh it's failing

122

00:03:42,949 --> 00:03:41,840

glad

123

00:03:44,789 --> 00:03:42,959

it's not what we're talking about we're

124

00:03:45,990 --> 00:03:44,799

talking about this glare we're talking

125

00:03:48,550 --> 00:03:46,000

about this glare the glare

126
00:03:50,070 --> 00:03:48,560
from uh from a very very bright light

127
00:03:53,589 --> 00:03:50,080
and the surrounding

128
00:03:53,910 --> 00:03:53,599
glare not the flare not the uh the glare

129
00:03:57,110 --> 00:03:53,920
of

130
00:04:00,390 --> 00:03:57,120
a reflection and not the veiling glare

131
00:04:01,110 --> 00:04:00,400
it's also not uh sensor spread people

132
00:04:03,190 --> 00:04:01,120
think that

133
00:04:04,390 --> 00:04:03,200
when you shine a bright light on a

134
00:04:06,869 --> 00:04:04,400
camera sensor

135
00:04:08,470 --> 00:04:06,879
then it gets overloaded and the the

136
00:04:09,750 --> 00:04:08,480
cells like start spreading out to the

137
00:04:11,190 --> 00:04:09,760
surrounding cells that's not really

138
00:04:13,270 --> 00:04:11,200

what's happening here

139

00:04:14,710 --> 00:04:13,280

uh you can kind of tell it's not by just

140

00:04:16,710 --> 00:04:14,720

looking at the the shape and the fact

141

00:04:18,629 --> 00:04:16,720

that it moves with the optics

142

00:04:20,150 --> 00:04:18,639

but you know the sensor spread is kind

143

00:04:21,909 --> 00:04:20,160

of a i think that happened more with

144

00:04:23,909 --> 00:04:21,919

older cameras

145

00:04:25,430 --> 00:04:23,919

and you would typically see just kind of

146

00:04:27,110 --> 00:04:25,440

a horizontal line or sometimes a

147

00:04:28,390 --> 00:04:27,120

vertical line depending on which way the

148

00:04:30,230 --> 00:04:28,400

sensors were

149

00:04:31,590 --> 00:04:30,240

the cells were aligned in the census but

150

00:04:33,830 --> 00:04:31,600

that's not what i'm talking about here

151
00:04:34,710 --> 00:04:33,840
i'm talking very specifically about the

152
00:04:36,629 --> 00:04:34,720
spread

153
00:04:38,469 --> 00:04:36,639
of light around a very bright light that

154
00:04:41,270 --> 00:04:38,479
makes the shape of light

155
00:04:42,870 --> 00:04:41,280
which is bigger than the object itself

156
00:04:44,070 --> 00:04:42,880
now suppose uh

157
00:04:46,070 --> 00:04:44,080
instead of having just one light you

158
00:04:48,550 --> 00:04:46,080
have two lights like here i have two

159
00:04:49,350 --> 00:04:48,560
flashlights attached to a small model of

160
00:04:52,469 --> 00:04:49,360
a plane

161
00:04:54,230 --> 00:04:52,479
and i can turn them both on

162
00:04:56,550 --> 00:04:54,240
and they're both unknown if i point them

163
00:04:59,030 --> 00:04:56,560

so they're pointed at the uh

164

00:04:59,590 --> 00:04:59,040

uh the camera you can see that the

165

00:05:01,189 --> 00:04:59,600

shapes go

166

00:05:02,629 --> 00:05:01,199

longer this way because we've got these

167

00:05:04,550 --> 00:05:02,639

you know two

168

00:05:07,430 --> 00:05:04,560

two lights sideways and if i turn it

169

00:05:09,029 --> 00:05:07,440

through 90 degrees

170

00:05:10,469 --> 00:05:09,039

you can see it kind of uh it just

171

00:05:11,670 --> 00:05:10,479

rotates as you would expect so it's

172

00:05:15,029 --> 00:05:11,680

longer that way

173

00:05:18,230 --> 00:05:15,039

but if i'm going to move back a bit

174

00:05:19,830 --> 00:05:18,240

then the shape of the glare

175

00:05:22,230 --> 00:05:19,840

isn't really defined so much by the

176
00:05:22,790 --> 00:05:22,240
shape of the the orientation of the two

177
00:05:24,150 --> 00:05:22,800
engines

178
00:05:25,189 --> 00:05:24,160
they're pretty close together so at this

179
00:05:25,830 --> 00:05:25,199
point they could have almost like a

180
00:05:28,150 --> 00:05:25,840
point

181
00:05:29,909 --> 00:05:28,160
source now if i rotate it through 90

182
00:05:31,909 --> 00:05:29,919
degrees

183
00:05:33,430 --> 00:05:31,919
nothing really changes in fact you can't

184
00:05:34,070 --> 00:05:33,440
really tell that the glare is rotating

185
00:05:35,590 --> 00:05:34,080
at all

186
00:05:37,270 --> 00:05:35,600
i'm actually you're rotating the plane

187
00:05:39,670 --> 00:05:37,280
90 degrees i'm going to do it all the

188
00:05:41,830 --> 00:05:39,680

way around it's always upside down now

189

00:05:42,950 --> 00:05:41,840

and pretty much reaches i'm just going

190

00:05:43,590 --> 00:05:42,960

to show you here like it is actually

191

00:05:46,310 --> 00:05:43,600

rotated

192

00:05:47,510 --> 00:05:46,320

90 degrees but it's pretty much the same

193

00:05:49,909 --> 00:05:47,520

shape this way

194

00:05:51,430 --> 00:05:49,919

as it is this way which is like

195

00:05:53,029 --> 00:05:51,440

horizontal

196

00:05:54,550 --> 00:05:53,039

so even though we've got this

197

00:05:57,830 --> 00:05:54,560

configuration of two engines

198

00:06:00,870 --> 00:05:57,840

the glare is so much bigger than

199

00:06:03,029 --> 00:06:00,880

the the the engines and the plane itself

200

00:06:04,390 --> 00:06:03,039

uh you can't really tell if the plane is

201
00:06:05,909 --> 00:06:04,400
rotating or not

202
00:06:07,990 --> 00:06:05,919
you would be able to tell if the glare

203
00:06:09,189 --> 00:06:08,000
was rotating because you would see all

204
00:06:11,590 --> 00:06:09,199
these things here

205
00:06:13,590 --> 00:06:11,600
uh these little spikes and things rotate

206
00:06:15,510 --> 00:06:13,600
uh and if you had a

207
00:06:17,749 --> 00:06:15,520
a simpler glare that was just like

208
00:06:19,909 --> 00:06:17,759
defined by the aperture of the camera

209
00:06:21,670 --> 00:06:19,919
then you would probably see that that's

210
00:06:24,790 --> 00:06:21,680
that shape rotate

211
00:06:26,550 --> 00:06:24,800
uh even when the object is not rotating

212
00:06:28,309 --> 00:06:26,560
but it's just the camera rotating

213
00:06:31,029 --> 00:06:28,319

so to sum it up uh what i'm talking

214

00:06:34,390 --> 00:06:31,039

about here when i talk about glare

215

00:06:35,670 --> 00:06:34,400

is the glare around a bright radiation

216

00:06:36,870 --> 00:06:35,680

source which could be an infrared

217

00:06:40,550 --> 00:06:36,880

radiation source

218

00:06:42,309 --> 00:06:40,560

of course the gimbal video is black hot

219

00:06:43,590 --> 00:06:42,319

which means i should really invert this

220

00:06:45,189 --> 00:06:43,600

image so it would look something like

221

00:06:47,350 --> 00:06:45,199

this

222

00:06:48,790 --> 00:06:47,360

and we're not talking about we're not

223

00:06:49,749 --> 00:06:48,800

talking about lens flare these little

224

00:06:51,749 --> 00:06:49,759

things down here

225

00:06:52,950 --> 00:06:51,759

and it's it's not so it's not reflecting

226

00:06:54,950 --> 00:06:52,960

off my glasses

227

00:06:56,390 --> 00:06:54,960

that's not the glare we're talking about