## **Roulette wheel motion blur example**



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Sensor: HD @ 1/1.9" Lens: 9mm Distance: 1.5m Roulette wheel: 80cm Number wheel: 46cm Tangential speed:  $r x \omega => v = 0.83 m/s$ 0.83 m/s = 3.0 km/h





HD (1920 x 1080) Sensor @ 1/1.9" Electronic exposure = 1/60s Lens focal length = 9mm Distance to roulette = 1.5m Roulette wheel outer dia = 80cm Roulette numbers dia = 46cm Tangential speed:  $v = \tilde{r} \times \omega$ 

where r = 23 cm  $\omega = rotational speed$ in our case V = 3.0km/hr

ViDiLabs calc: 22 pixels blur





## Exposure 1/60s







HD (1920 x 1080) Sensor @ 1/1.9" Electronic exposure = 1/250s Lens focal length = 9mm Distance to roulette = 1.5m Roulette wheel outer dia = 80cm Roulette numbers dia = 46cm Tangential speed:

 $v = r x \omega$ 

where r = 23cm ω = rotational speed in our case V = 3.0km/hr

ViDiLabs calc: 6 pixels blur





# Exposure 1/250s









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# Wide angle lens distortions in IP CCTV

Most of CCTV camera users have experienced the so-called "barrel" optical distortion with short focal length lenses (wide angle of view).

While such distortions are accepted by most in the surveillance industry as "normal" - they should not be accepted as such.

- Objects appear **distorted** near the edges
- scene

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- Pixel density calculation is **no longer accurate** for that region of the

- The aspect ratio is no longer 16:9 and vertical field appears cropped.





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