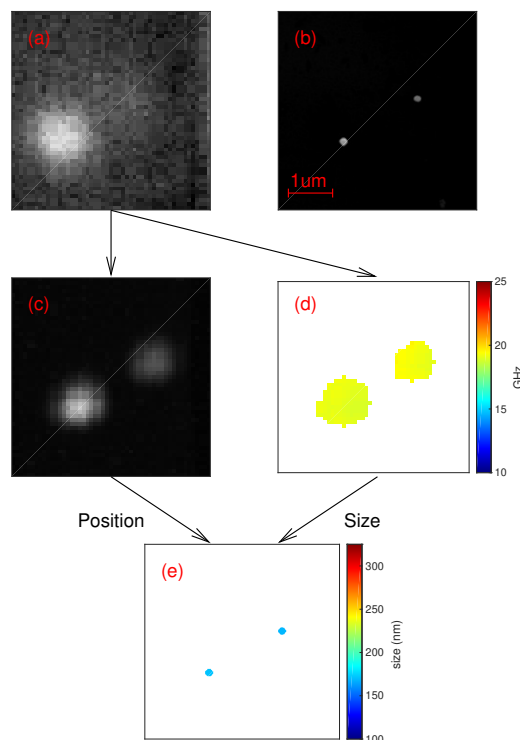


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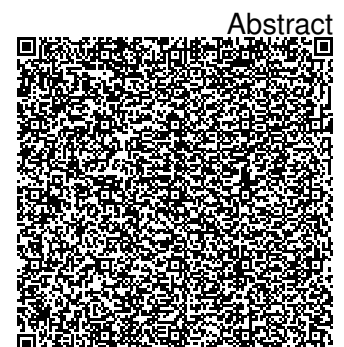
# “Super-resolution imaging using nanobells”

Rafael Fuentes



12:00pm Tuesday 3rd July 2018  
203 Tower Building  
All Welcome

[http://optics.nottingham.ac.uk/wiki/Talks\\_2018](http://optics.nottingham.ac.uk/wiki/Talks_2018)



# “Super-resolution imaging using nanobells”

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In this talk we demonstrate a new scheme for optical super-resolution, inspired, in-part, by PALM and STORM. In this scheme each object in the field of view is tagged with a signal that allows them to be detected separately. By doing this we can identify and locate each object separately with significantly higher resolution than the diffraction limit. We demonstrate this by imaging nanoparticles significantly smaller than the optical resolution limit. In this case the “tag” is the frequency of vibration of nanoscale “bells” made of metallic nanoparticles whose acoustic vibrational frequency is in the multi-GHz range. Since the vibration of the particles can be easily excited and detected and the frequency is directly related to the particle size, the signal from many particles of sufficiently different sizes can be separated even though they are smaller than, and separated by less than, the optical resolution limit. This has many potential advantages – such nanoparticles are easily inserted into cells and well tolerated, the particles do not bleach and can be produced easily with very dispersed sizes.