

Title: New 2D Superresolution Mode for ZEISS Airyscan – Fast and Gentle Confocal Imaging with 120 nm Resolution

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Abstract:

Utilizing a pinhole-plane imaging concept, Airyscan allows for simultaneous improvement in resolution and signal-to-noise by capitalizing on an innovative 32-channel GaAsP photomultiplier tube (PMT) array detector. Each detection channel functions as a very small pinhole to increase resolution while the overall detector design delivers better signal-to-noise than traditional GaAsP-based confocal systems. In the past, a stack of at least five z-slices had to be deconvolved to get usable images with an optical section thinner than one Airy unit. Now, the new 2D Superresolution mode for Airyscan delivers images with the thinnest optical section (0.2 Airy units) from a single image while maintaining the light collection efficiency of a much larger 1.25 Airy unit pinhole.

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