

Active spatial polarization control for microscope objectives

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Abstract content **
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We show a micro optical device for non-pixelated active spatial polarization control. The device is based on a photoaddressable material (PAM). The birefringence of the PAM is locally modulated due to the intensity of the addressing light. This enables the creation of non pixelated spatial polarization patterns with fewer artefacts compared to devices like spatial light modulators.

The optical addressing is done by an integrated micro-optical illumination unit. VCSELs are used as a light source. The addressing patterns are generated by diffractive optical beam shapers. Due to the small size of the components it is possible to realize several addressing channels in one device. By controlling the current of the VCSELs, different illumination patterns can be switched or combined.

The complete system can be integrated into a microscope objective e.g. for switchable phase contrast methods.

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