



Max-Planck-Institut für Physik
(Werner-Heisenberg-Institut)

Lichtemission von PMTs und SiPM

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und

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Warum Lichtemission?

- Besseres Verständnis für Lichtdetektoren
- Verbesserungen - In Kooperation mit Herstellern
- Neue Charakterisierungsmethoden entwickeln

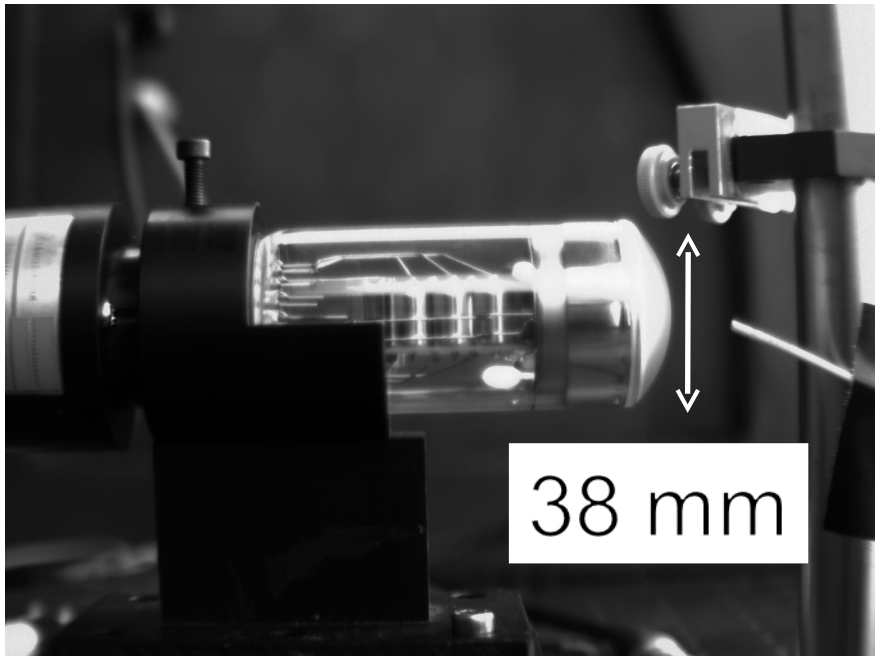


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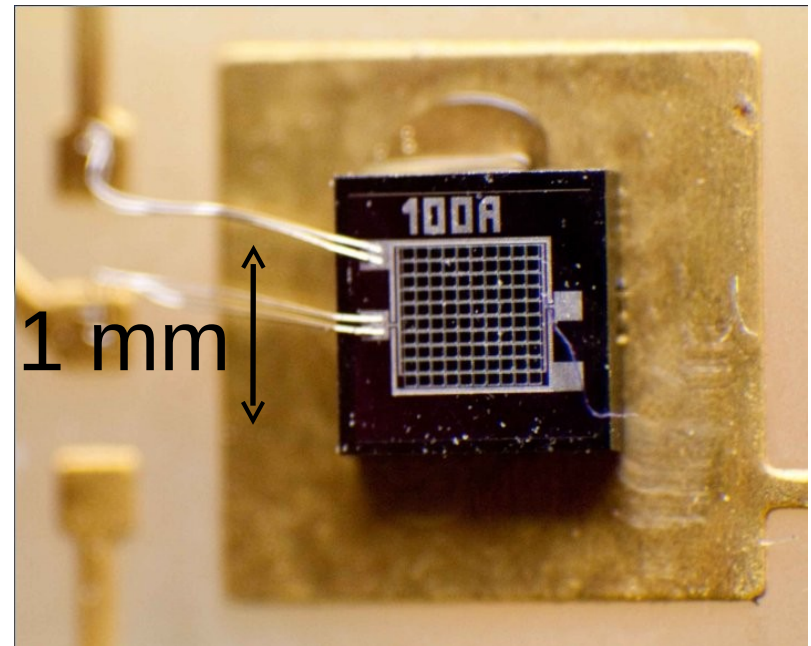
Warum Lichtemission?

Zwei Beispiele:

Photomultiplier Tube
(PMT)



Silicon Photomultiplier
(SiPM)



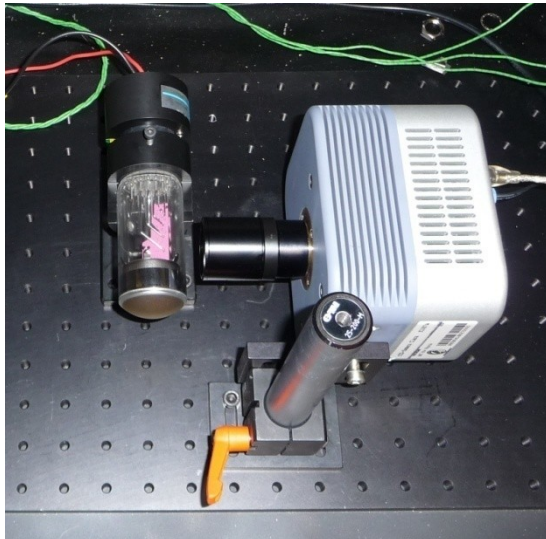


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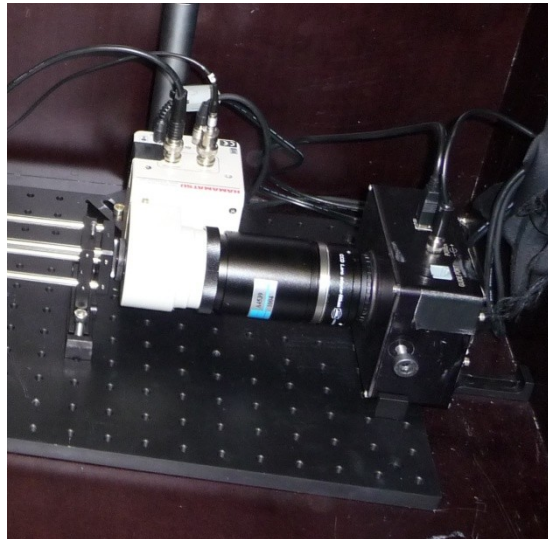
Wie wird gemessen?

Kameras

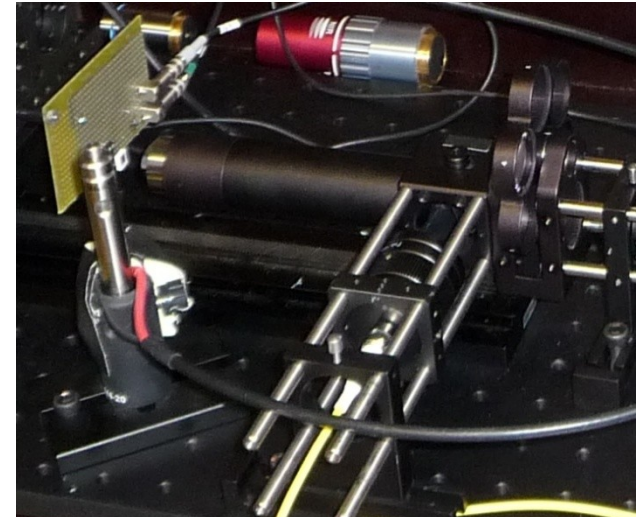
CCD



Schneller
Bildverstärker



Mikroskop

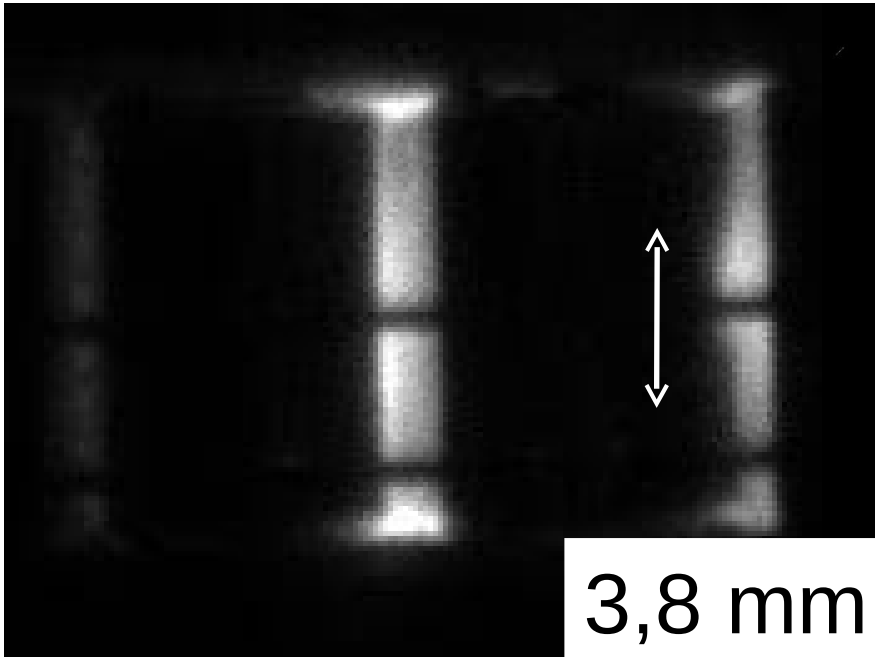




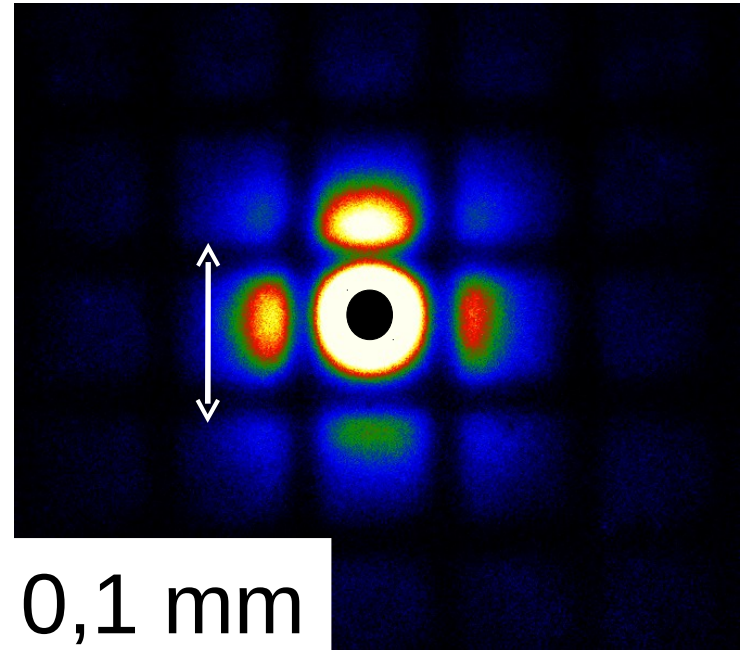
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Wie wird gemessen?

Photomultiplier Tube (PMT)



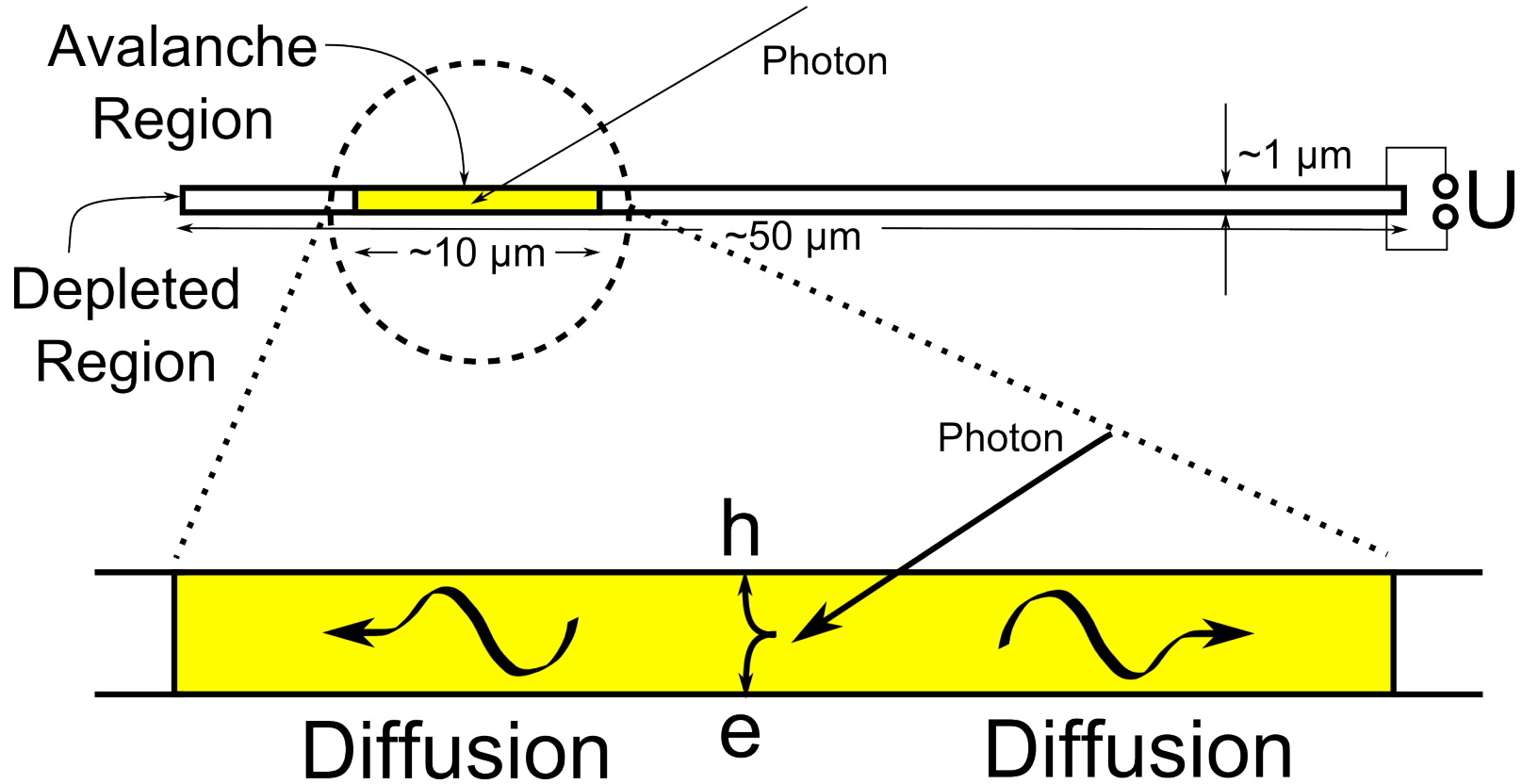
Silicon Photomultiplier (SiPM)





Was in einem SiPM passiert

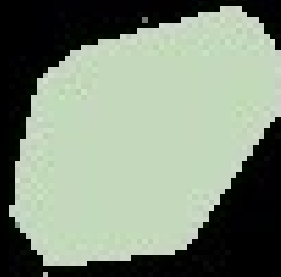
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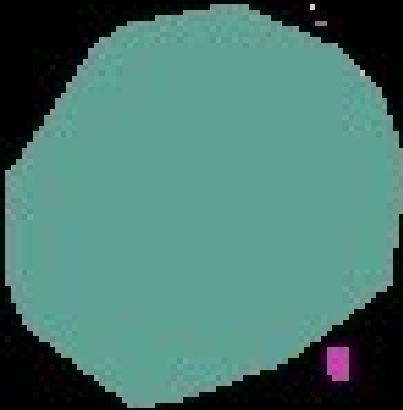


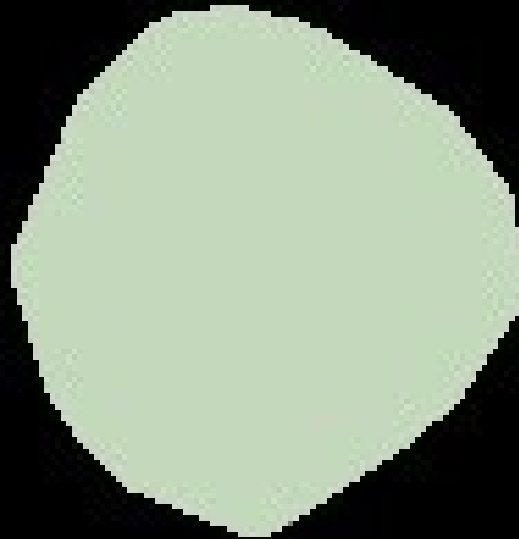


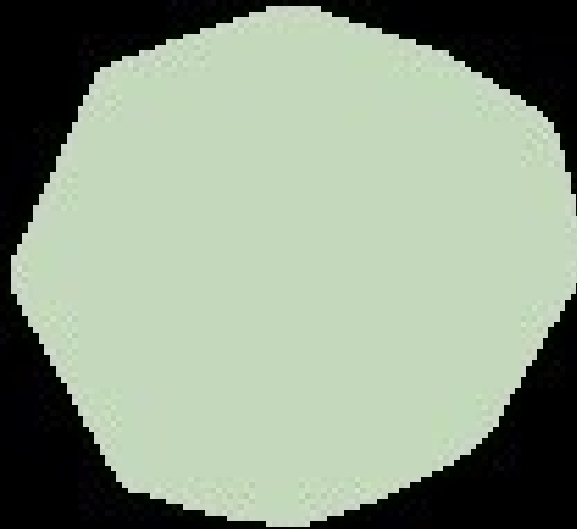
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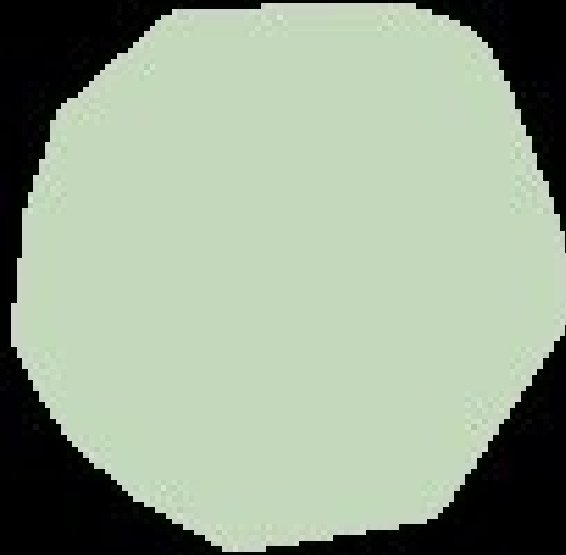


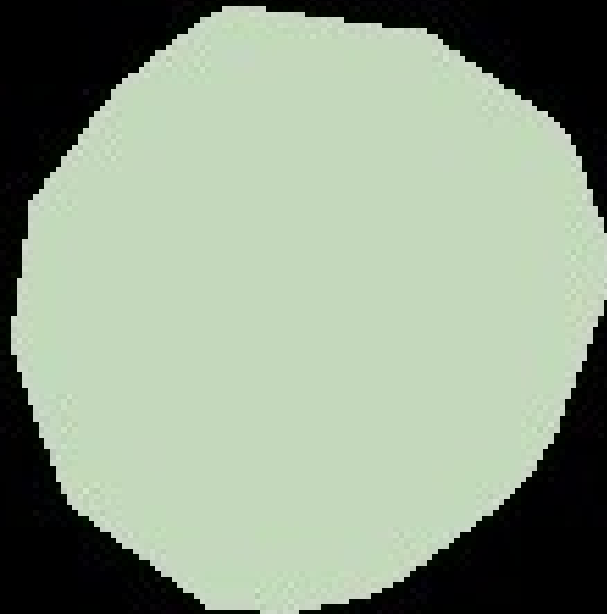


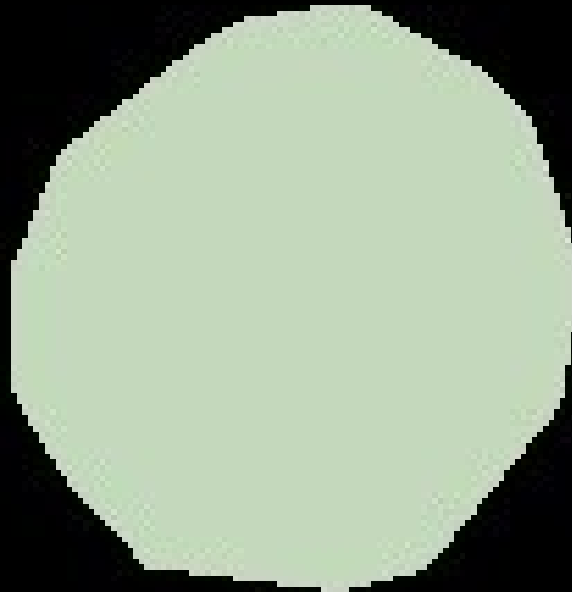


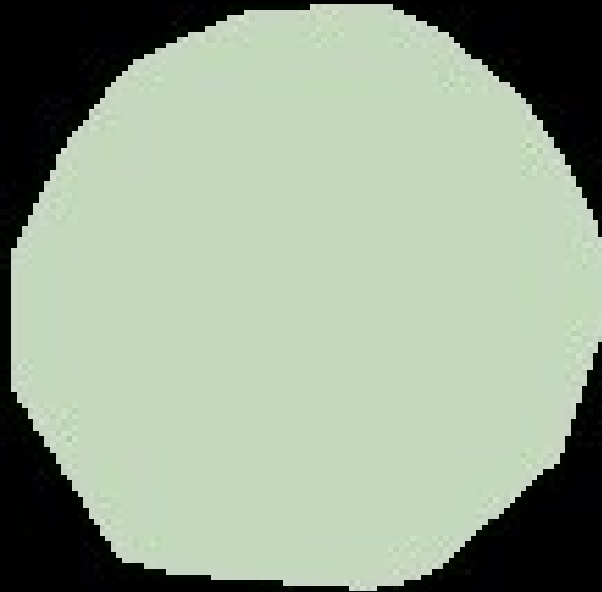


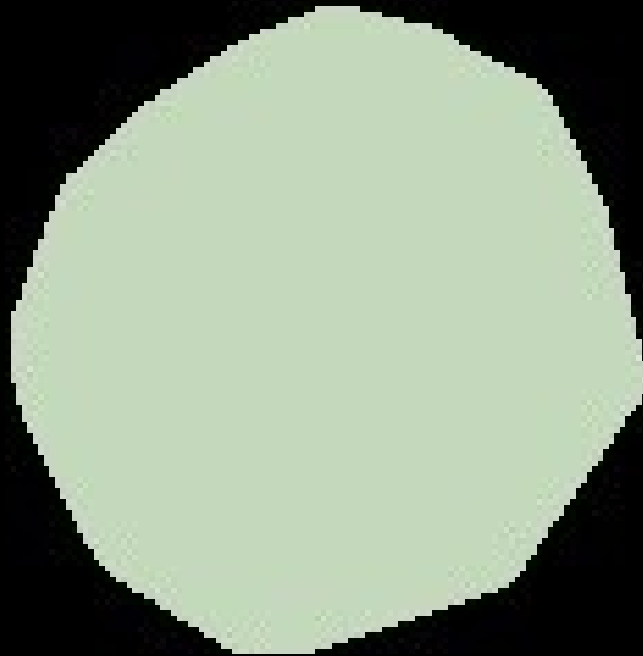


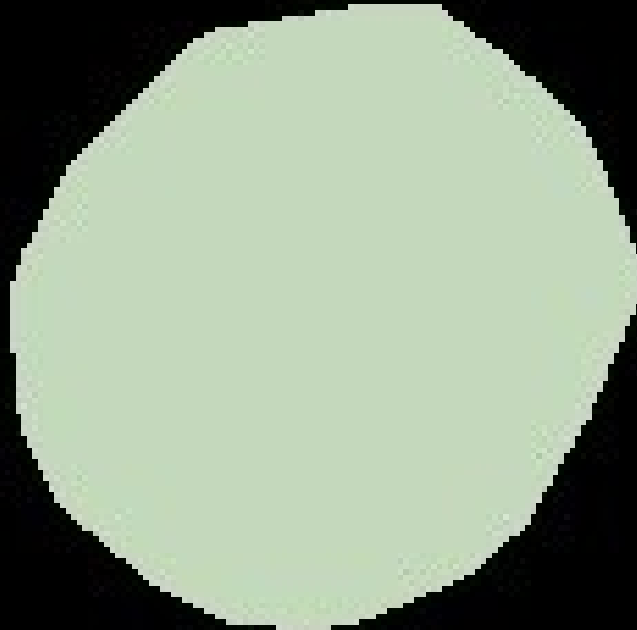


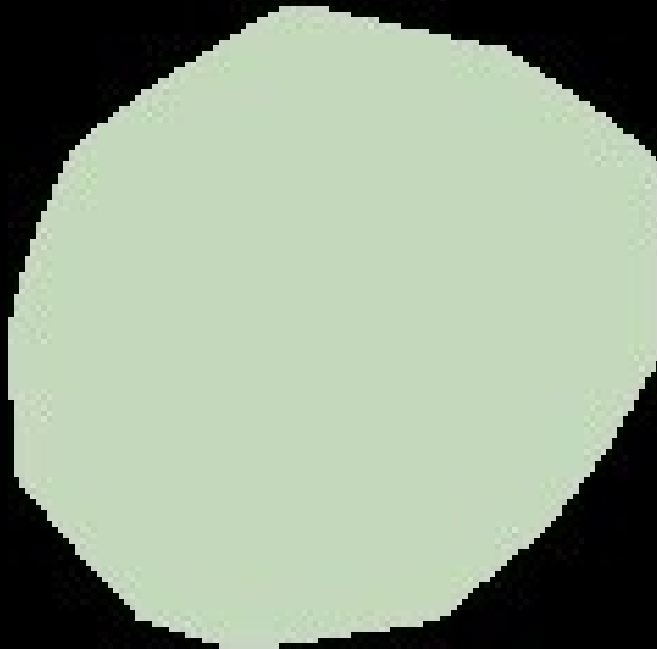


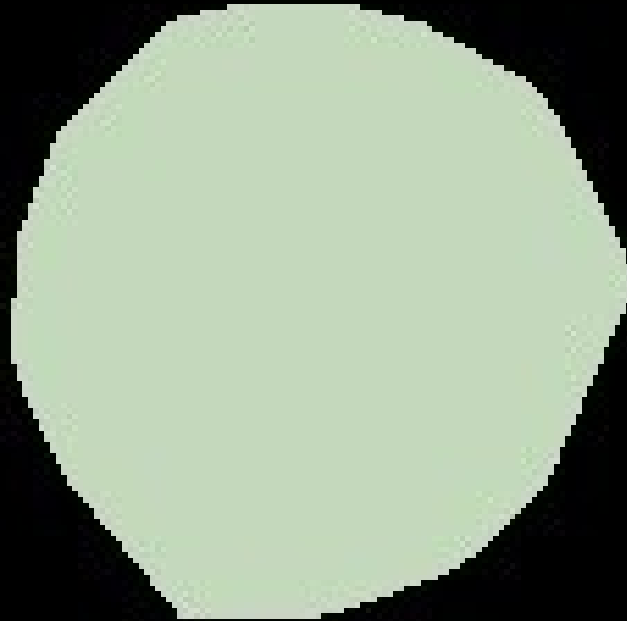




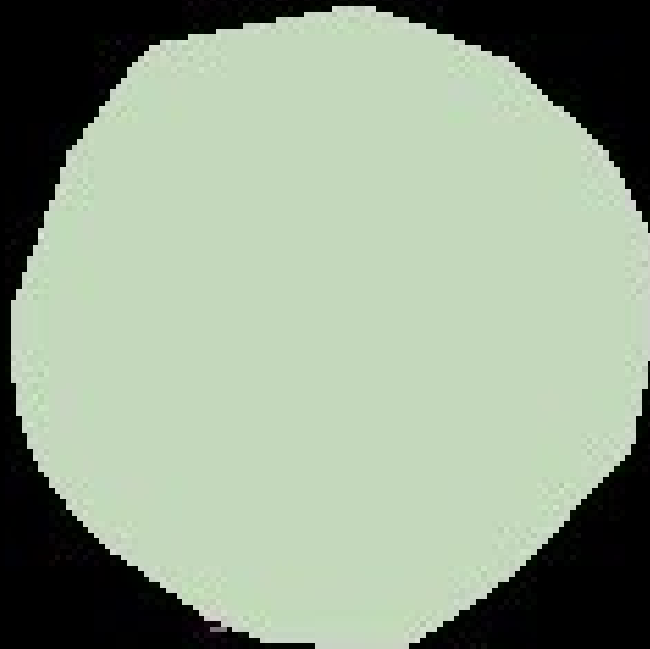


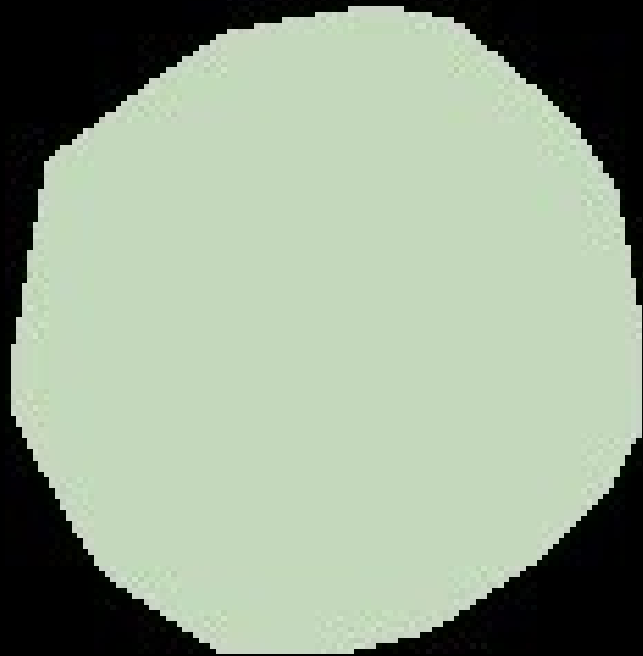


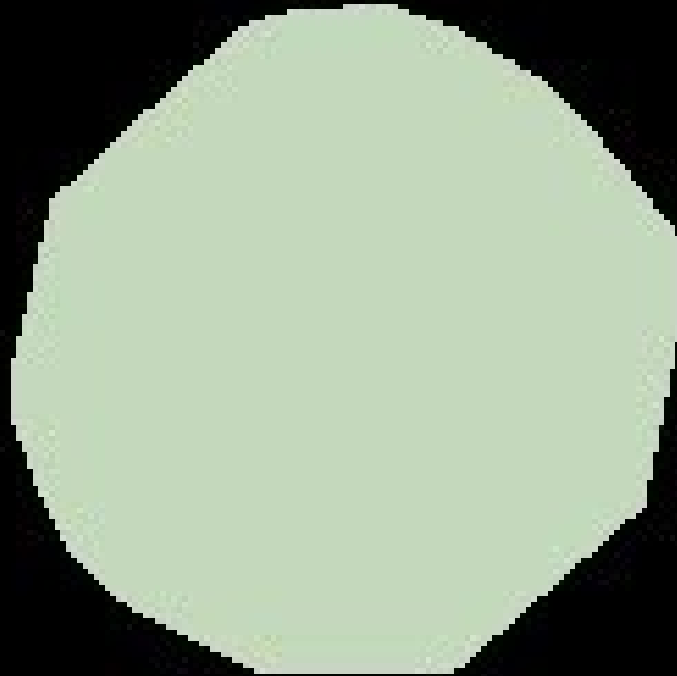


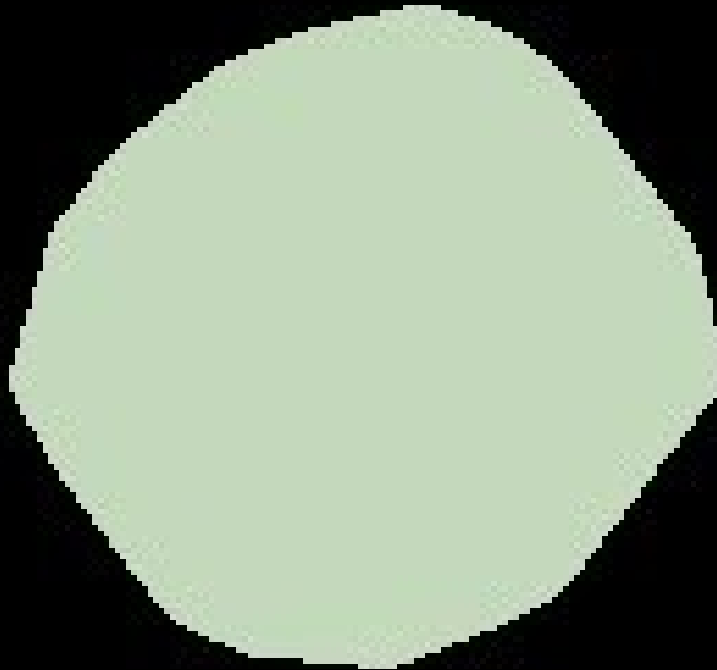


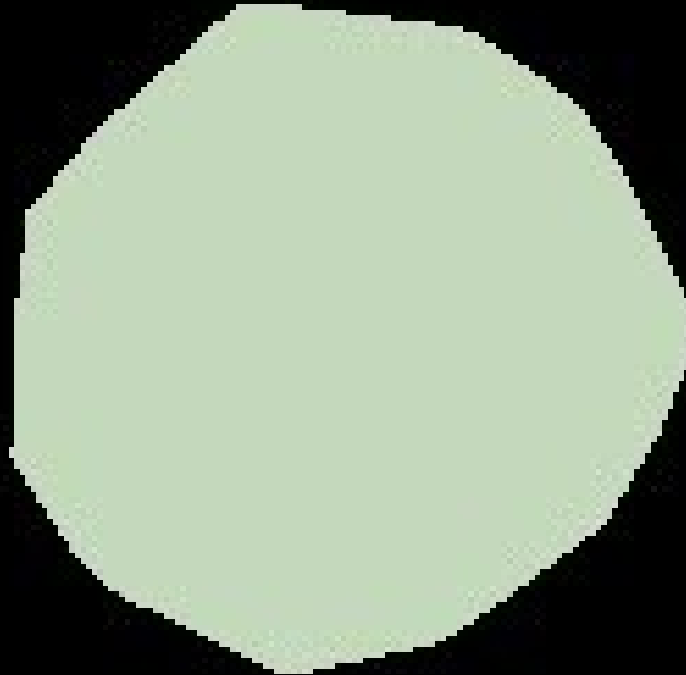


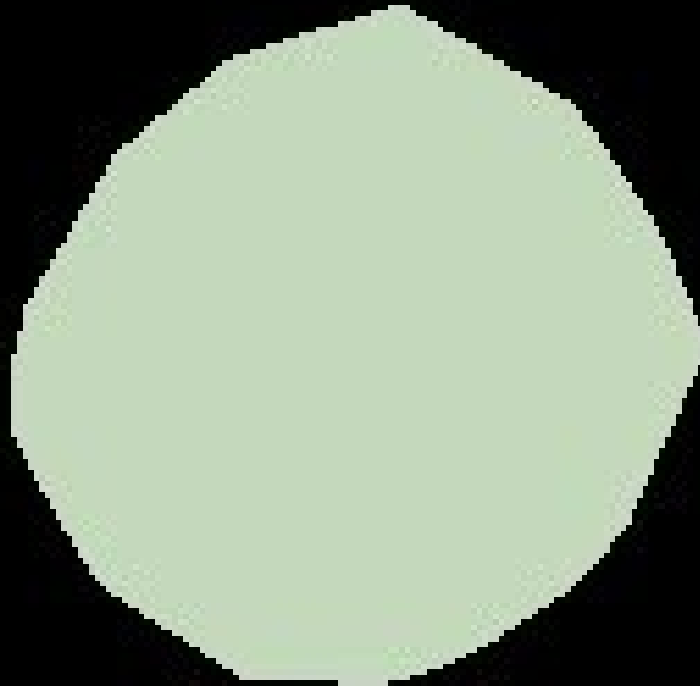


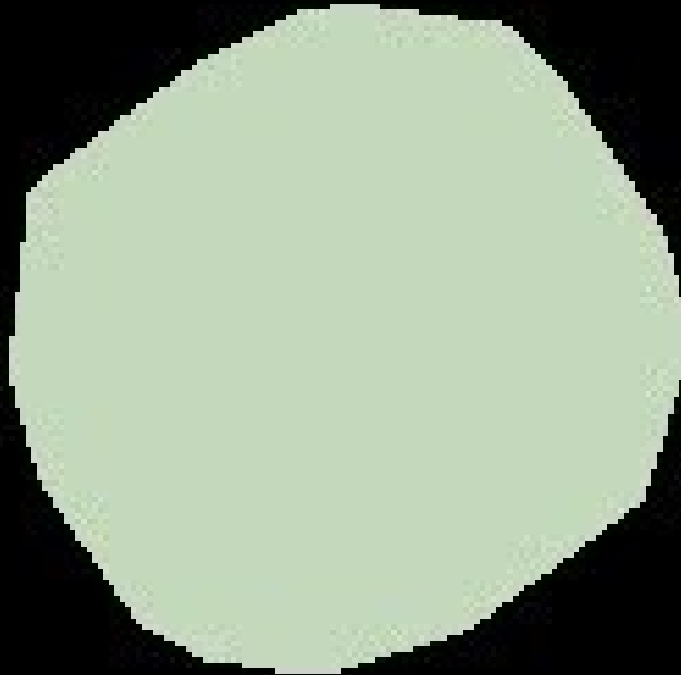


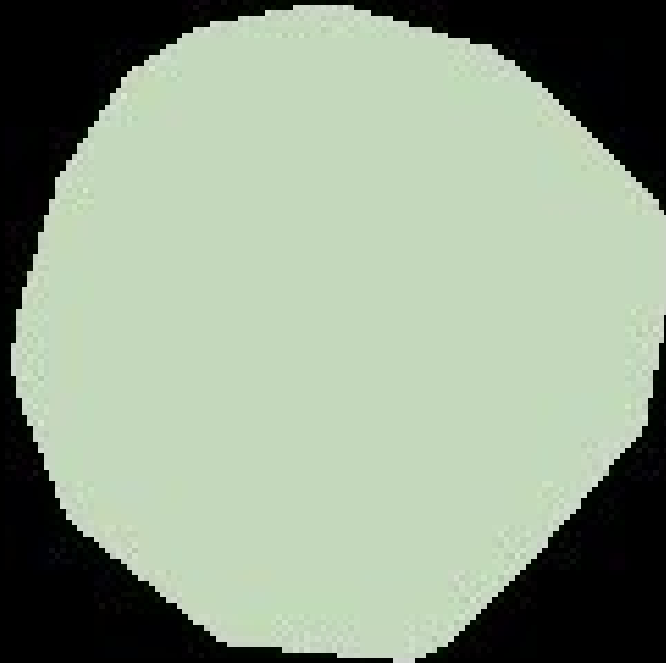


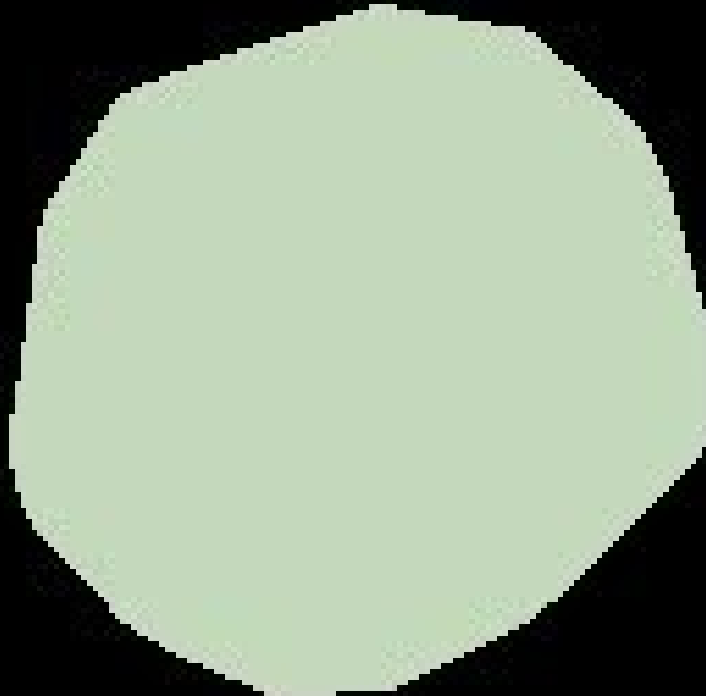


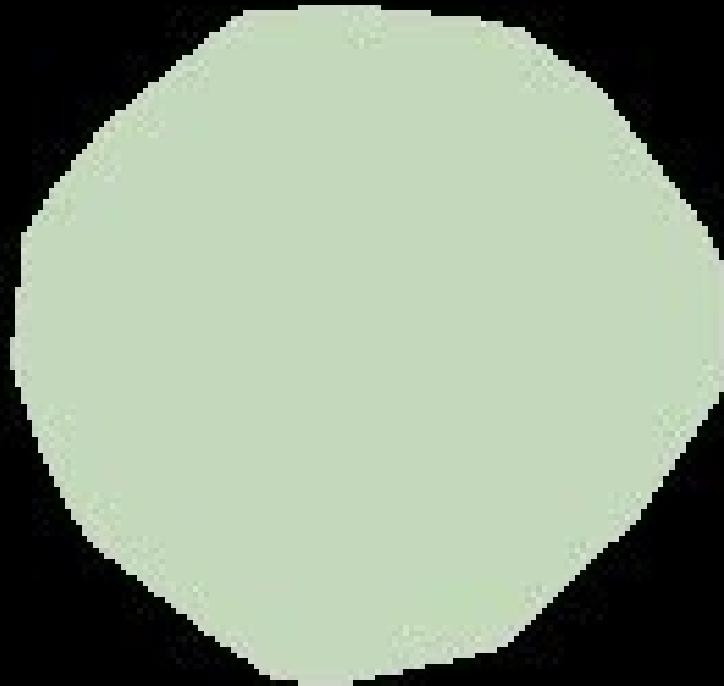


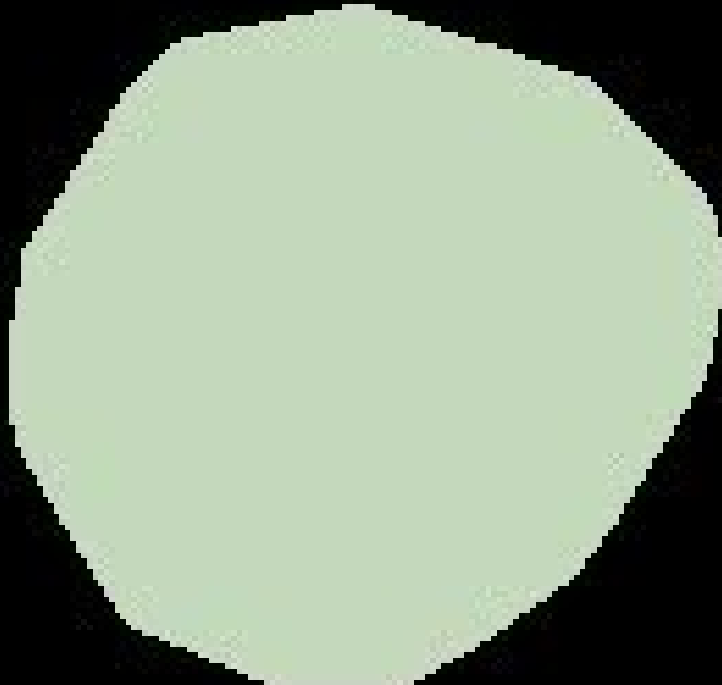


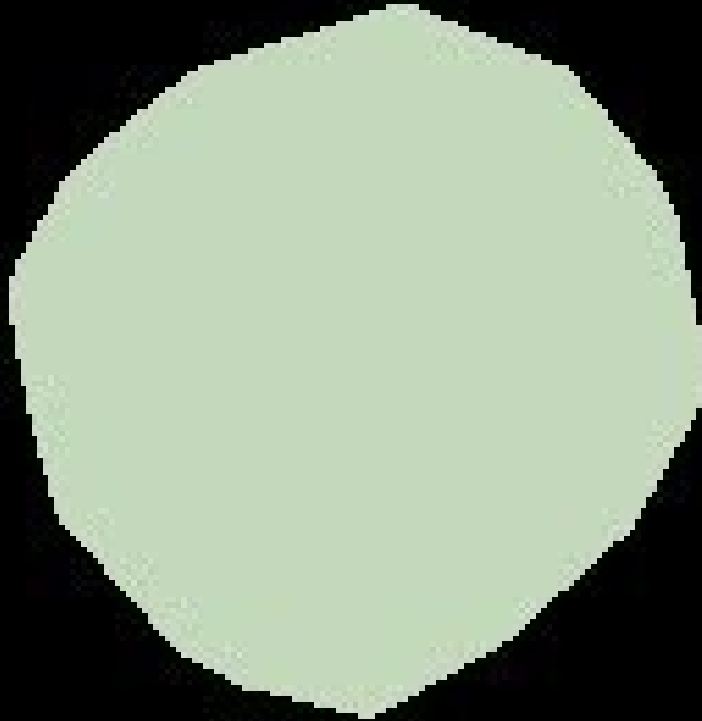


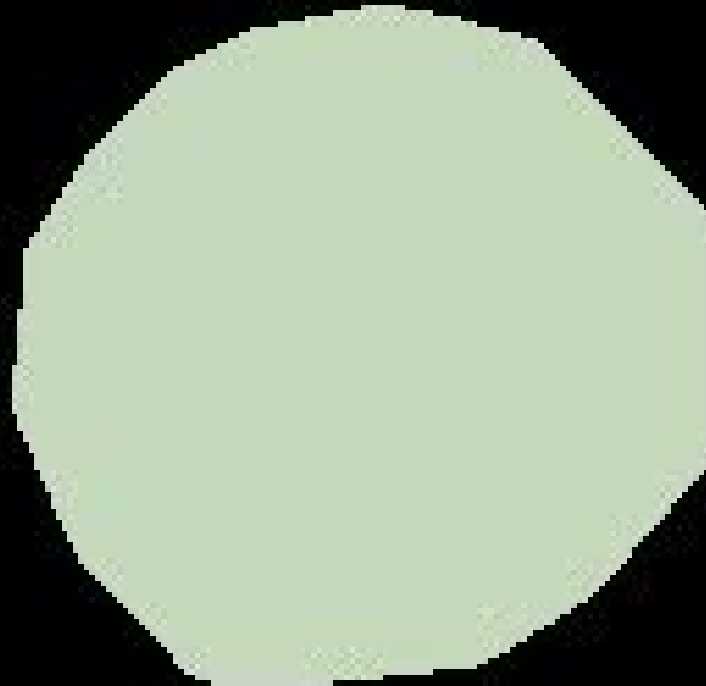




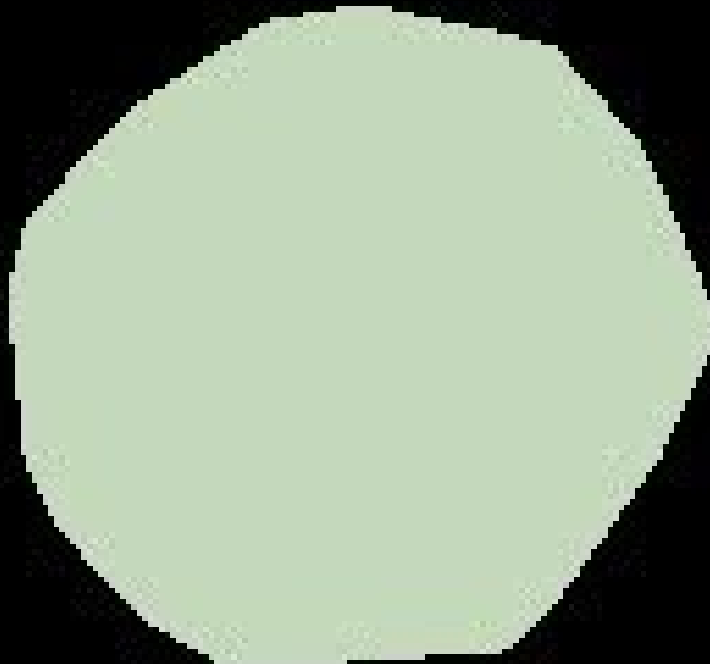


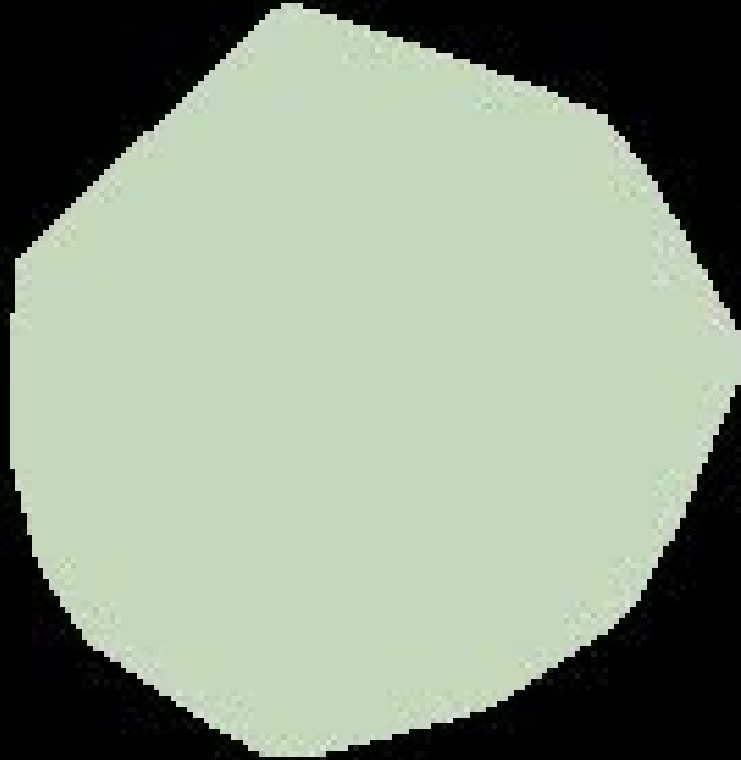


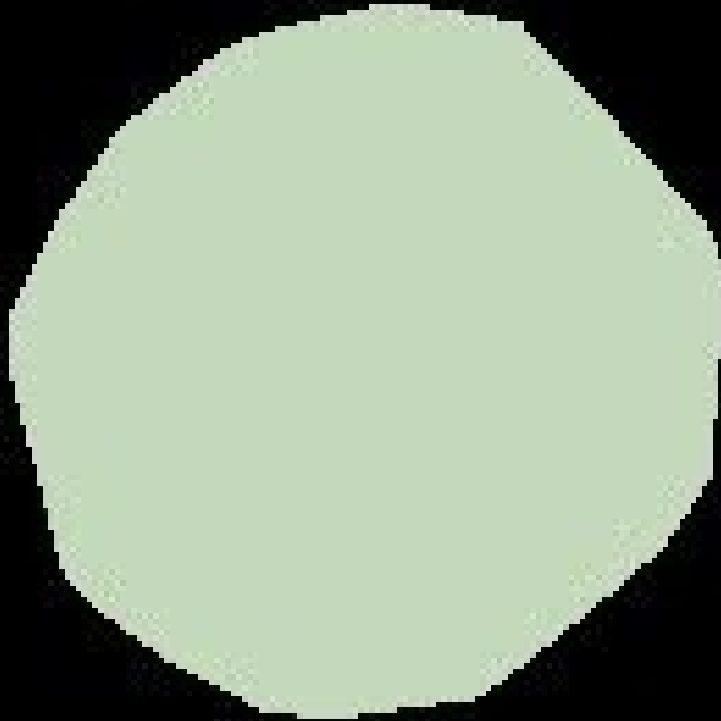


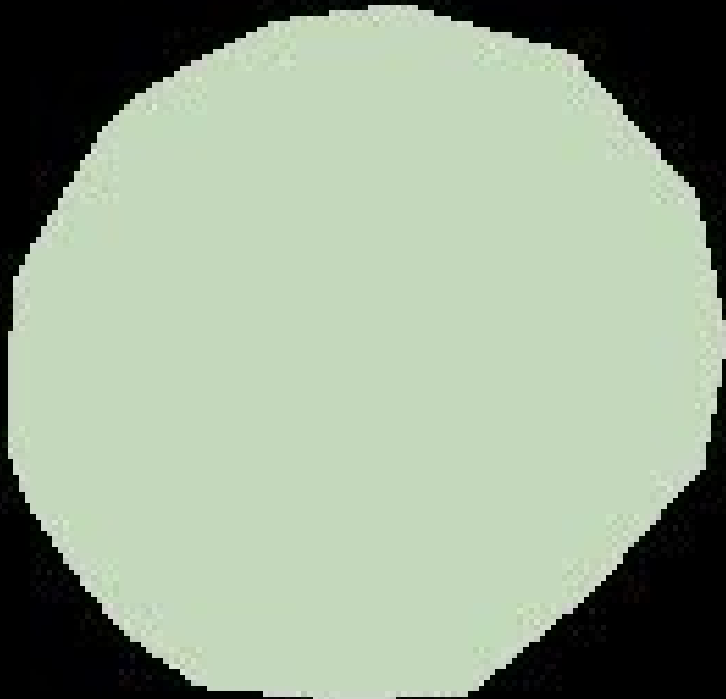


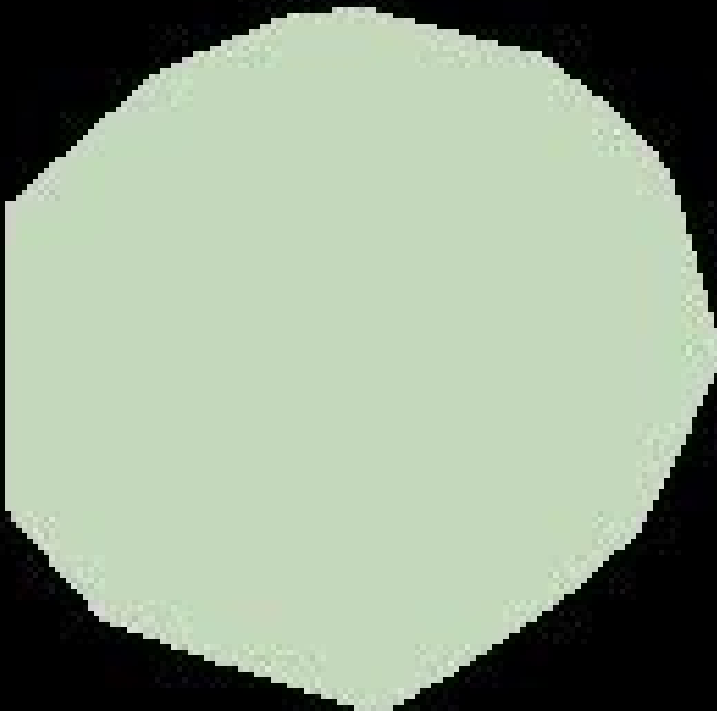


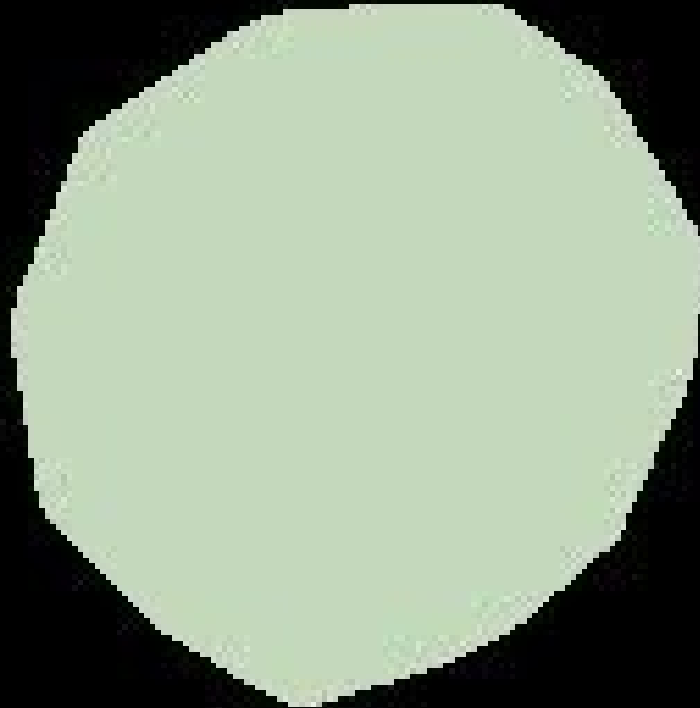


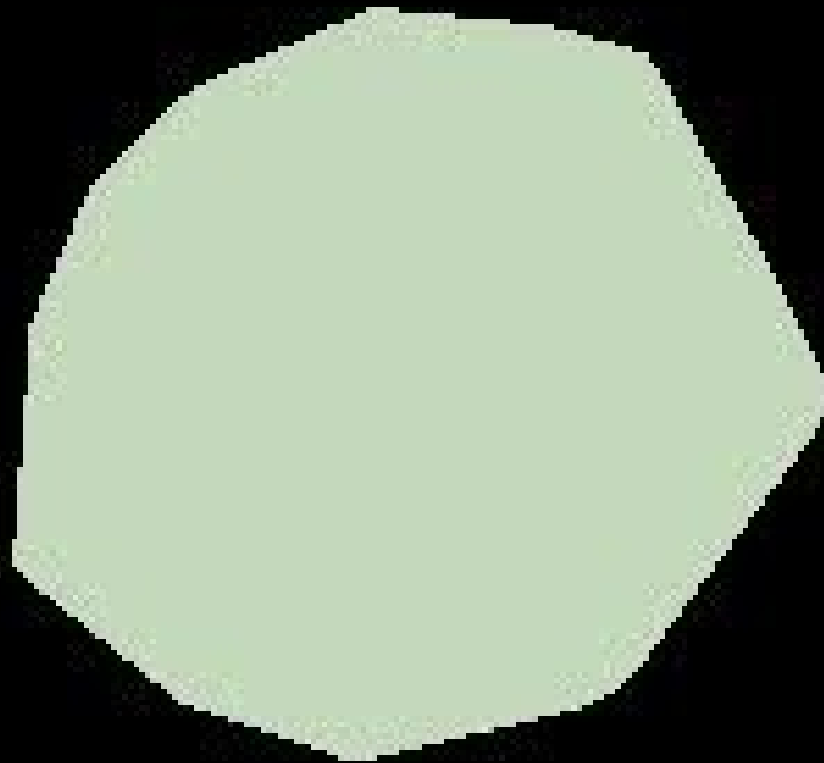


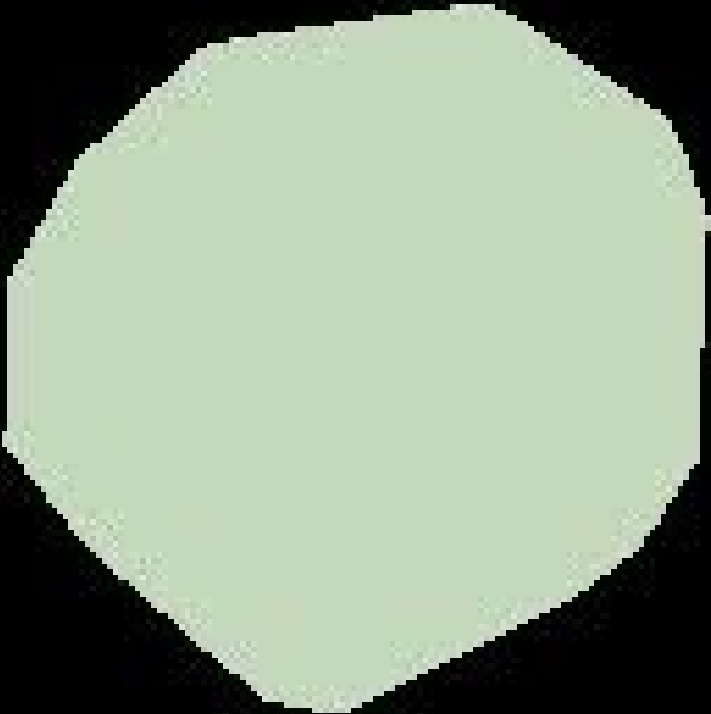


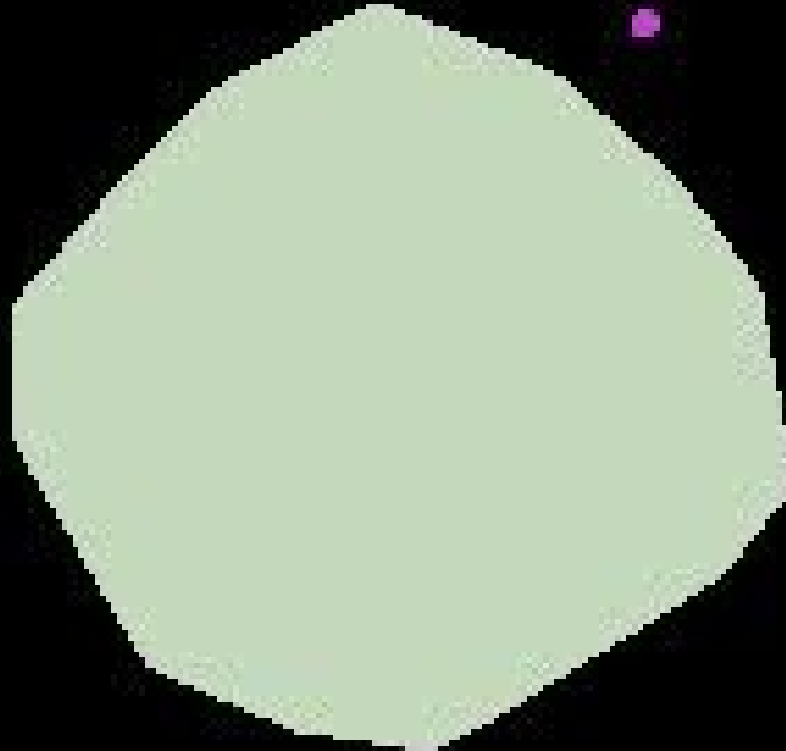


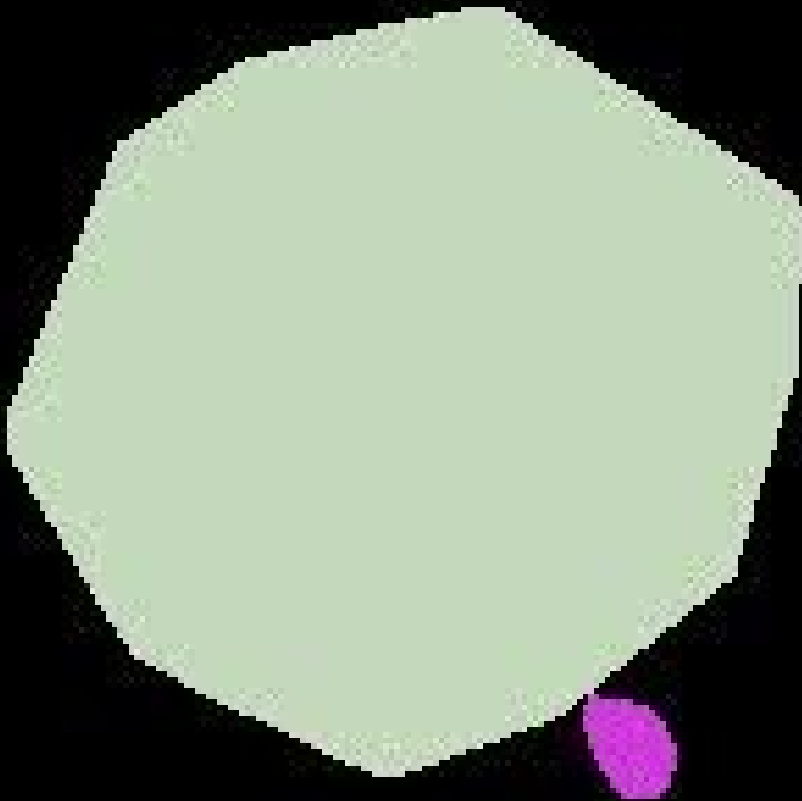


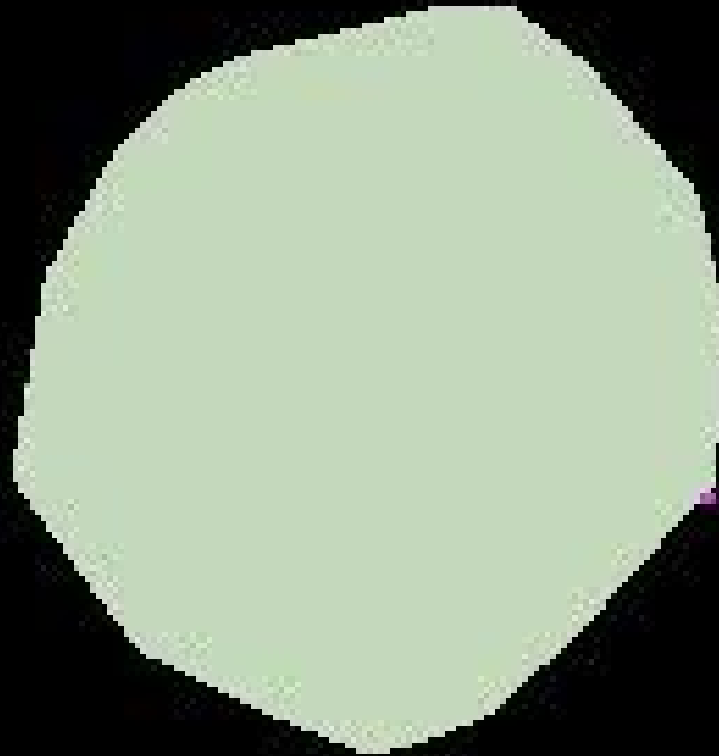






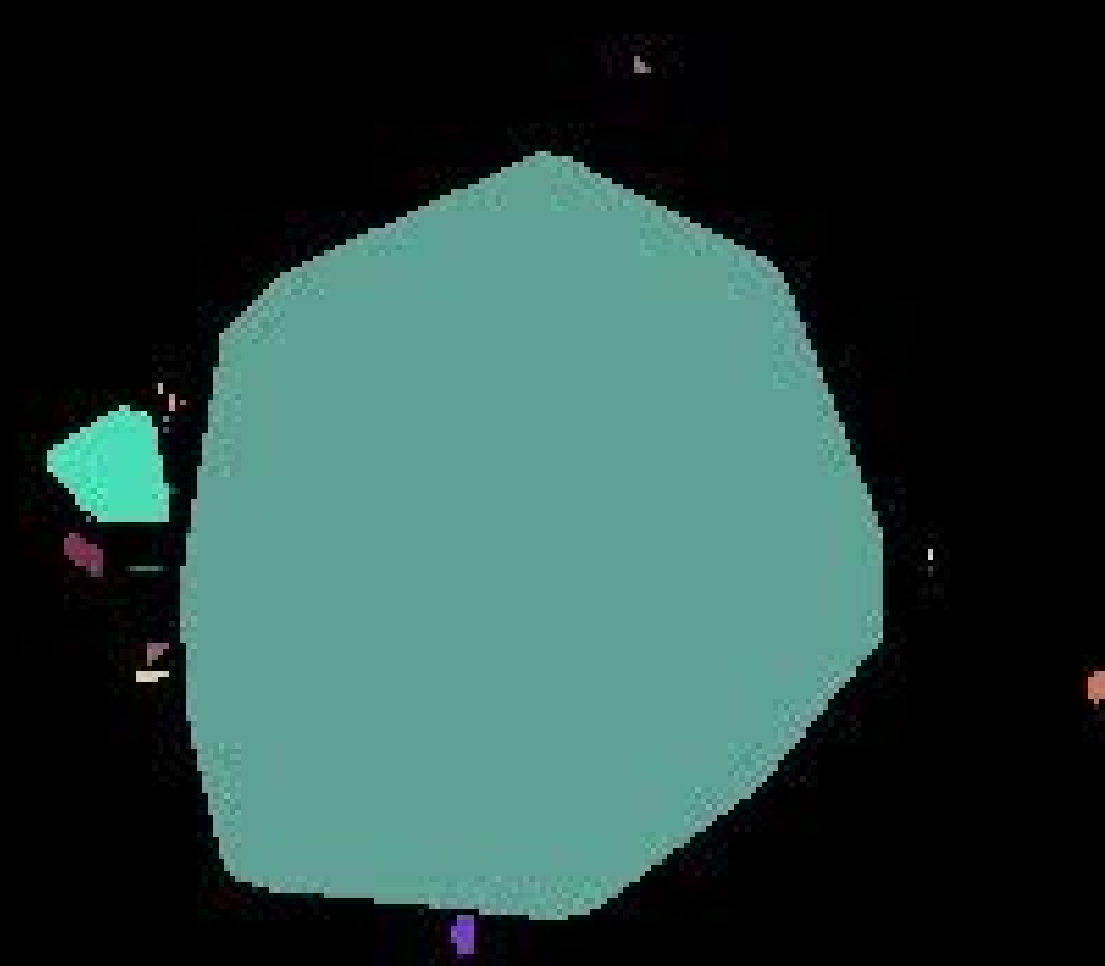


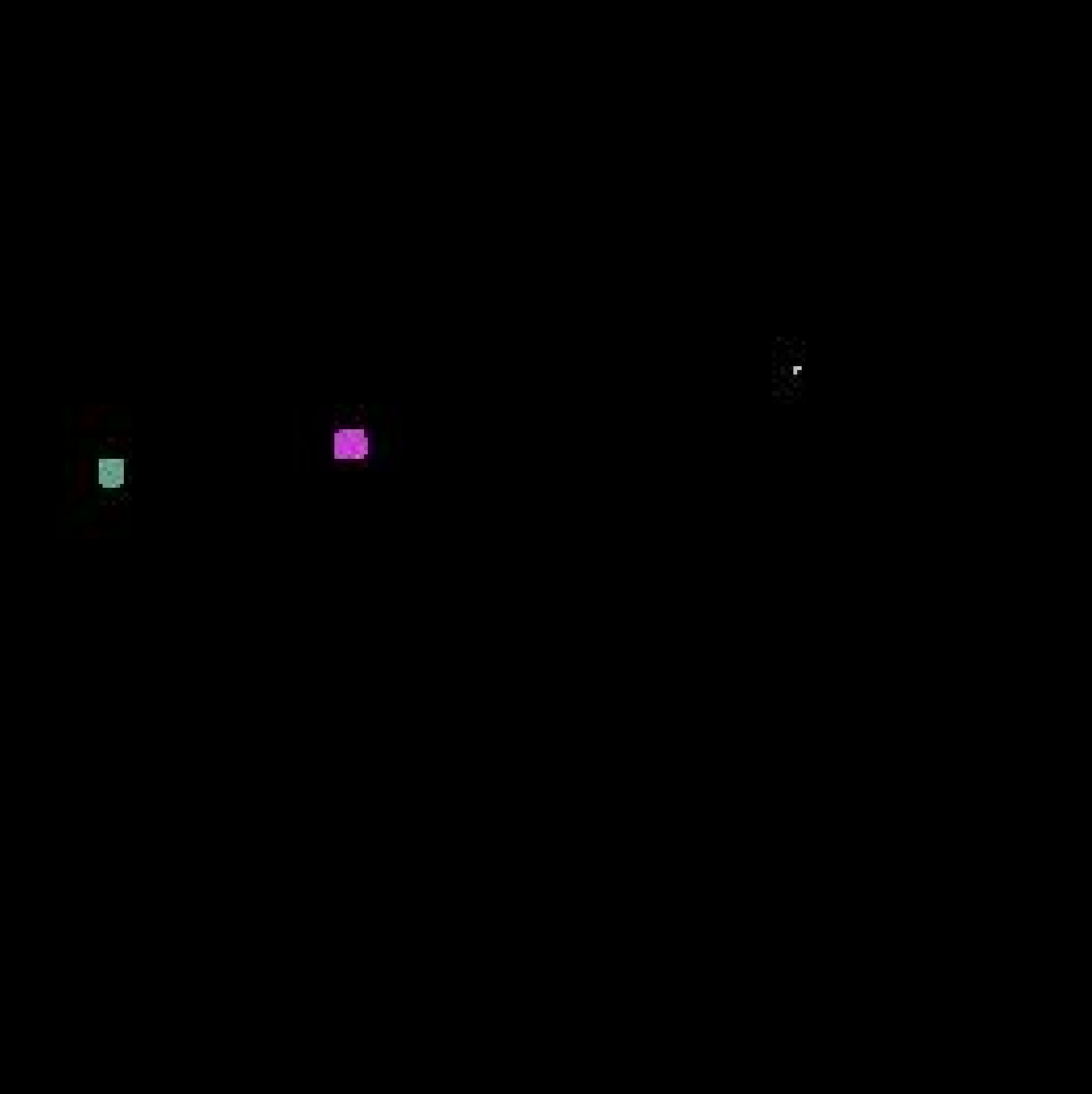






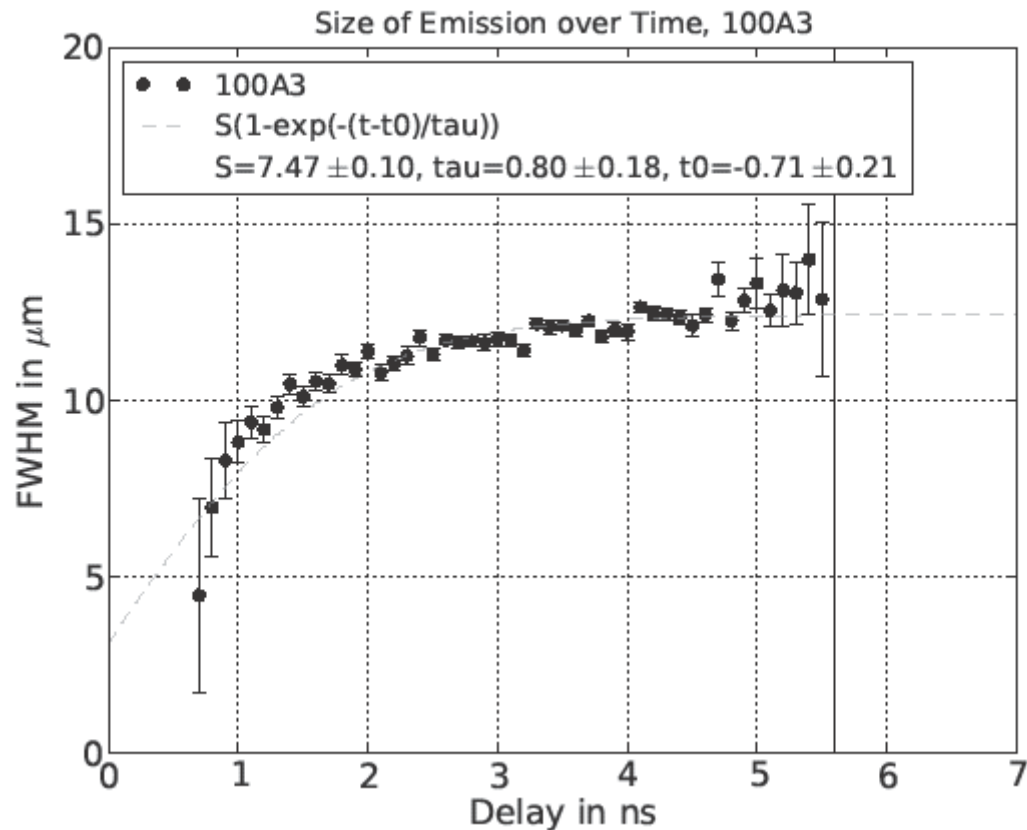








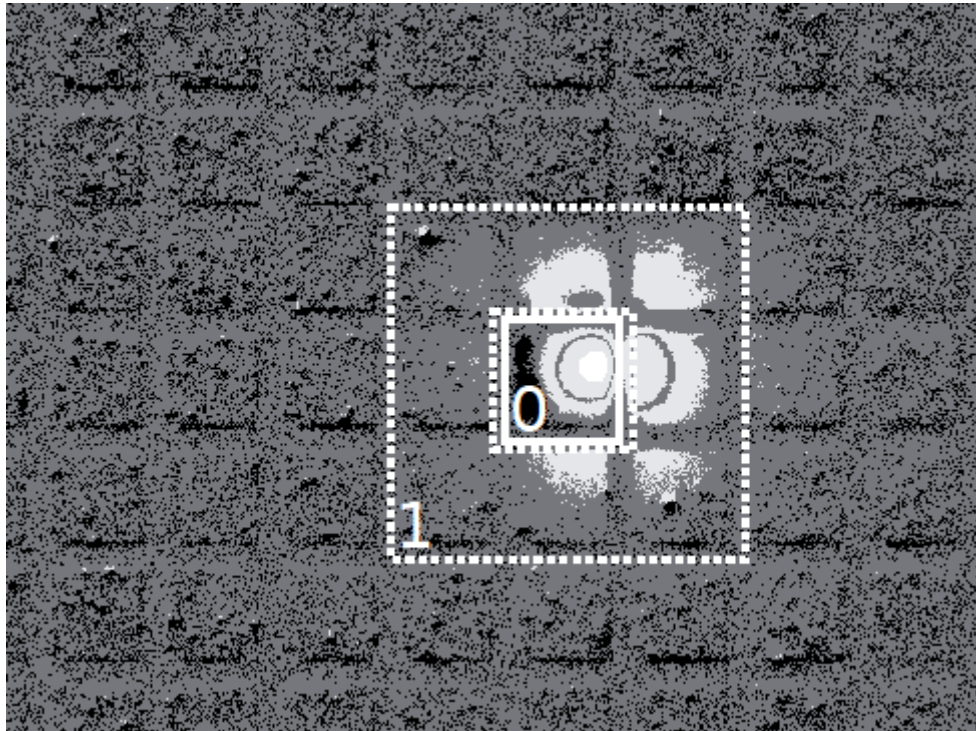
Was in einem SiPM passiert





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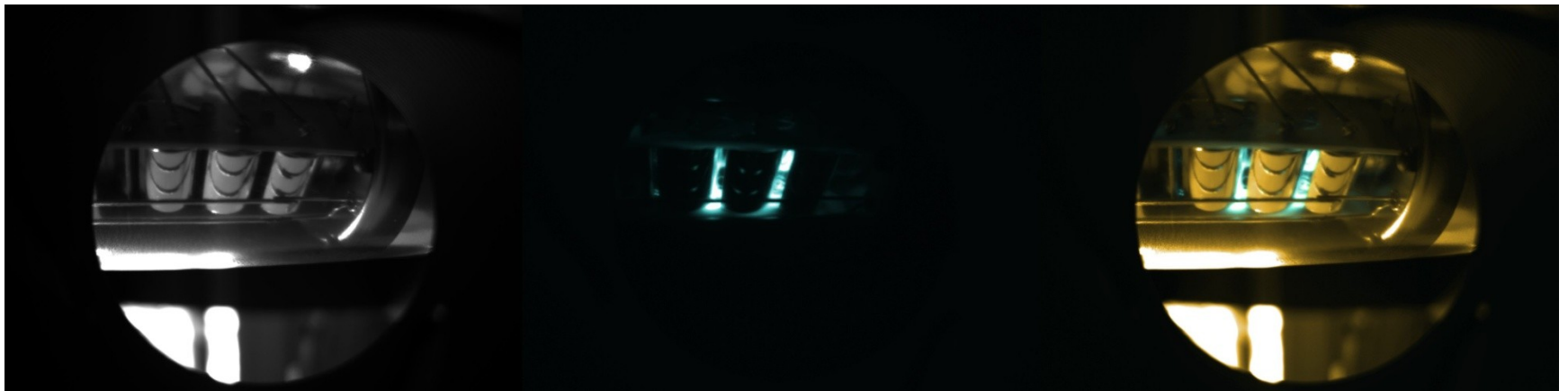
Was in einem SiPM passiert





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Was in einem PMT passiert





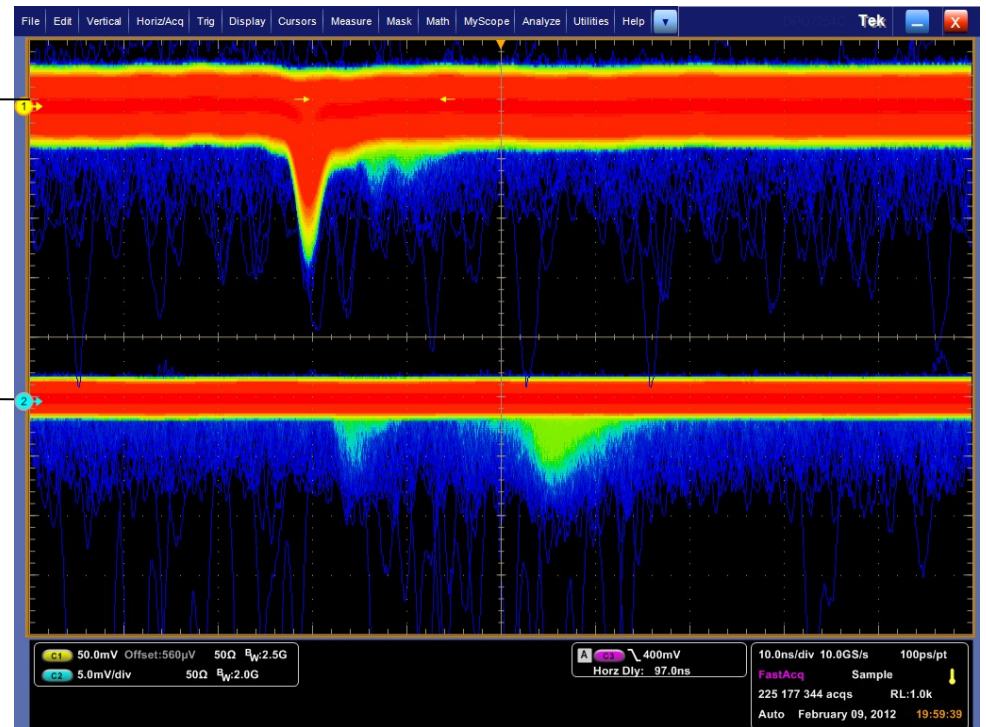
Was in einem PMT passiert

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Laser

PMT

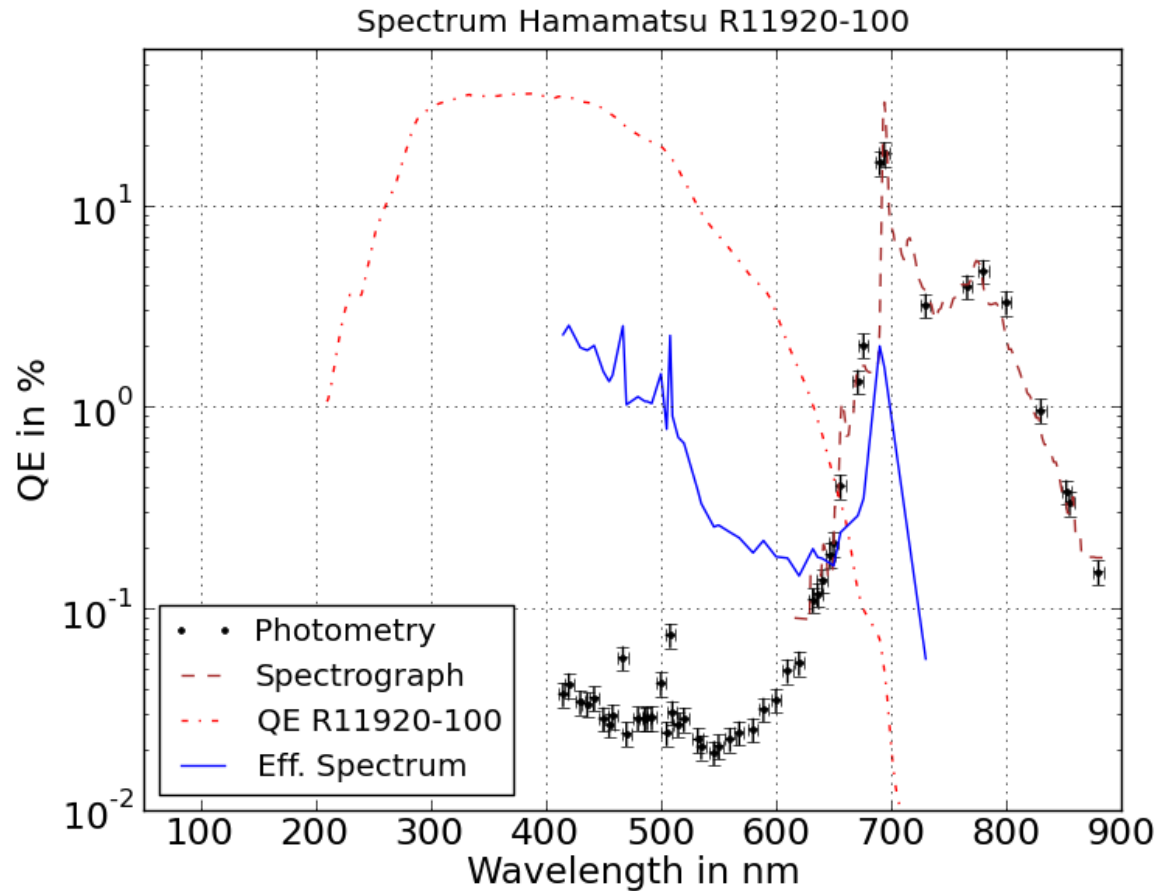
Monitor





Was in einem PMT passiert

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Zusammenfassung

- Wir wollen Lichtdetektoren verstehen und verbessern
- Mit Kameras messen wir deren Lichtemission → unerwünschte Signale studieren
- Zusammen mit Herstellern (Hamamatsu, Electron Tubes Ltd, Excelitas) arbeiten daran