

# The SPIvel Velocimeter

## An Overview



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# Background

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- **Several instruments available on the market**
- **Single point measurements obtained using LDV, PDA, hot wire anemometry**
- **For planar velocities, PIV is the most commonly used instrument (requires capture of images of individual particles)**
- **Image correlation velocimetry does not require resolution of individual particles, but requires distinct patterns**

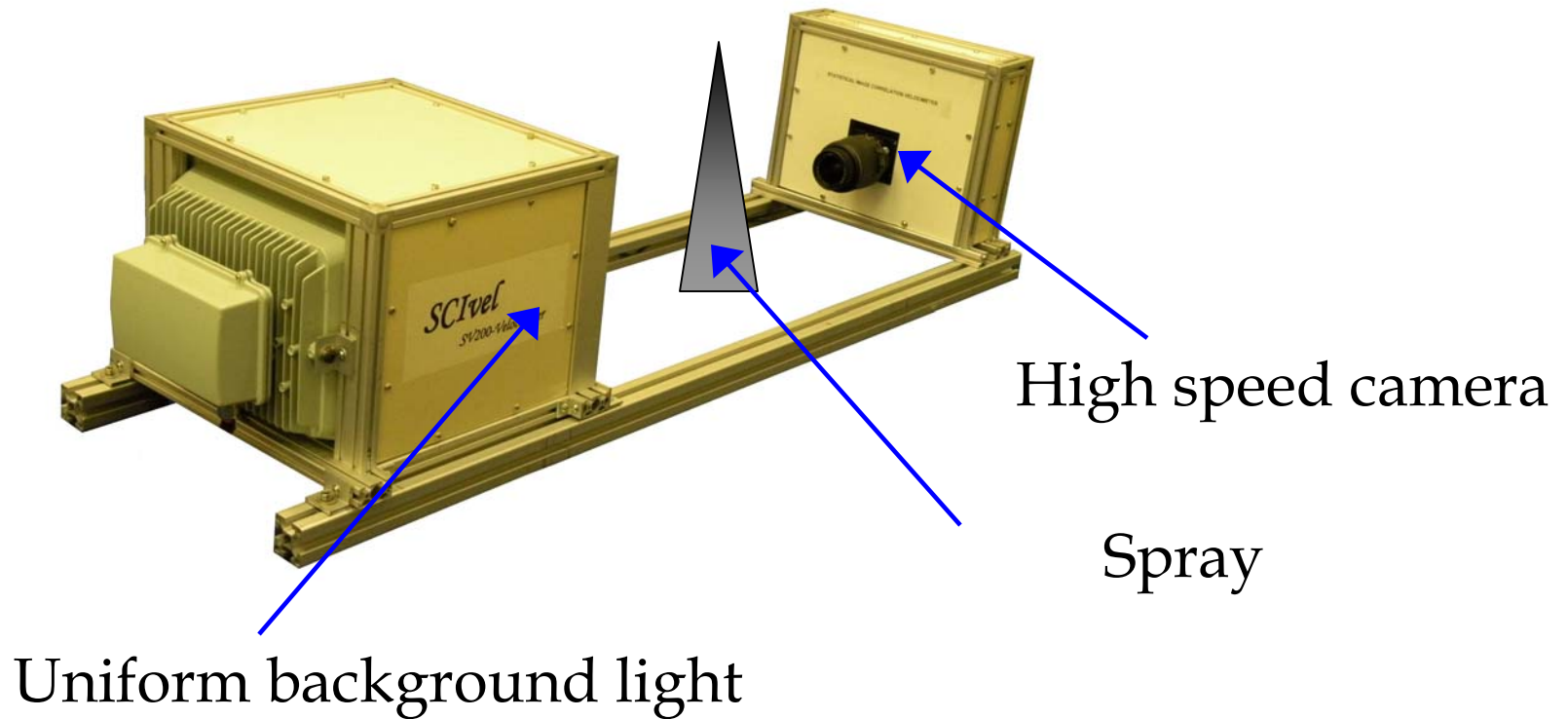


# Statistical Pattern Imaging Velocimetry

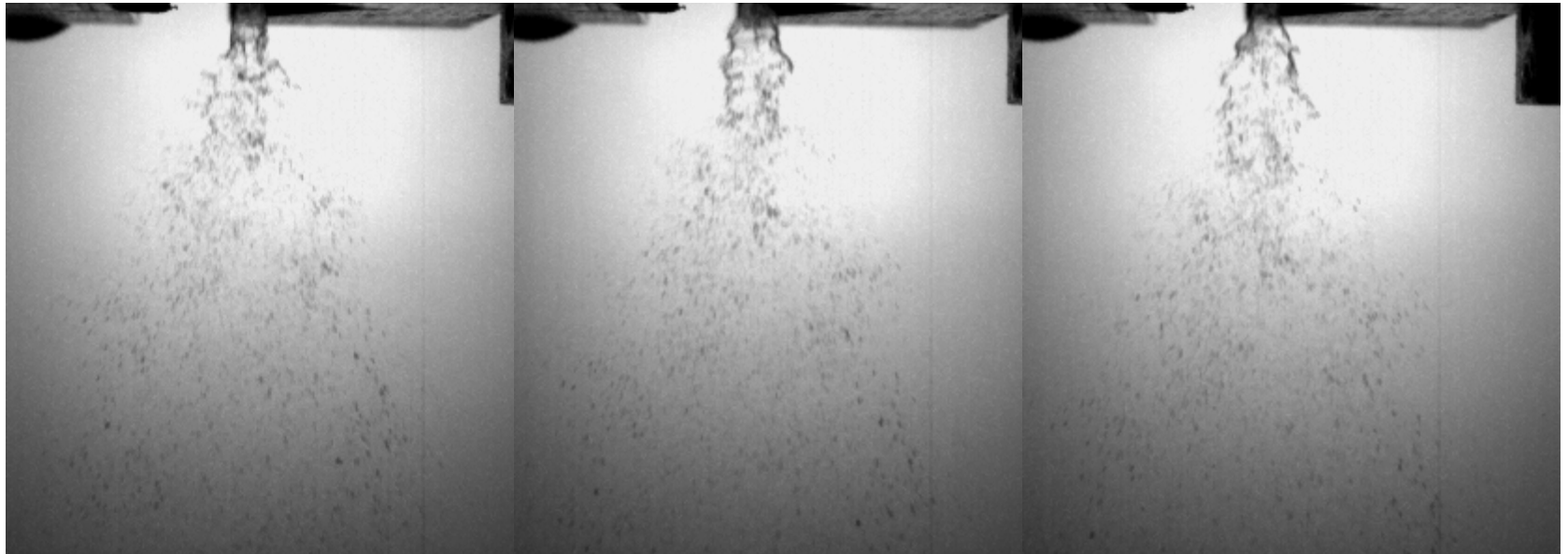
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- **Does not rely on capturing individual particles or distinct patterns**
- **Requires large ensemble of images**
- **Computes statistical correlation between patterns over the entire pixel range**
- **Image correlation velocimetry does not require resolution of individual particles**

# Basic Arrangement



# Sample Images



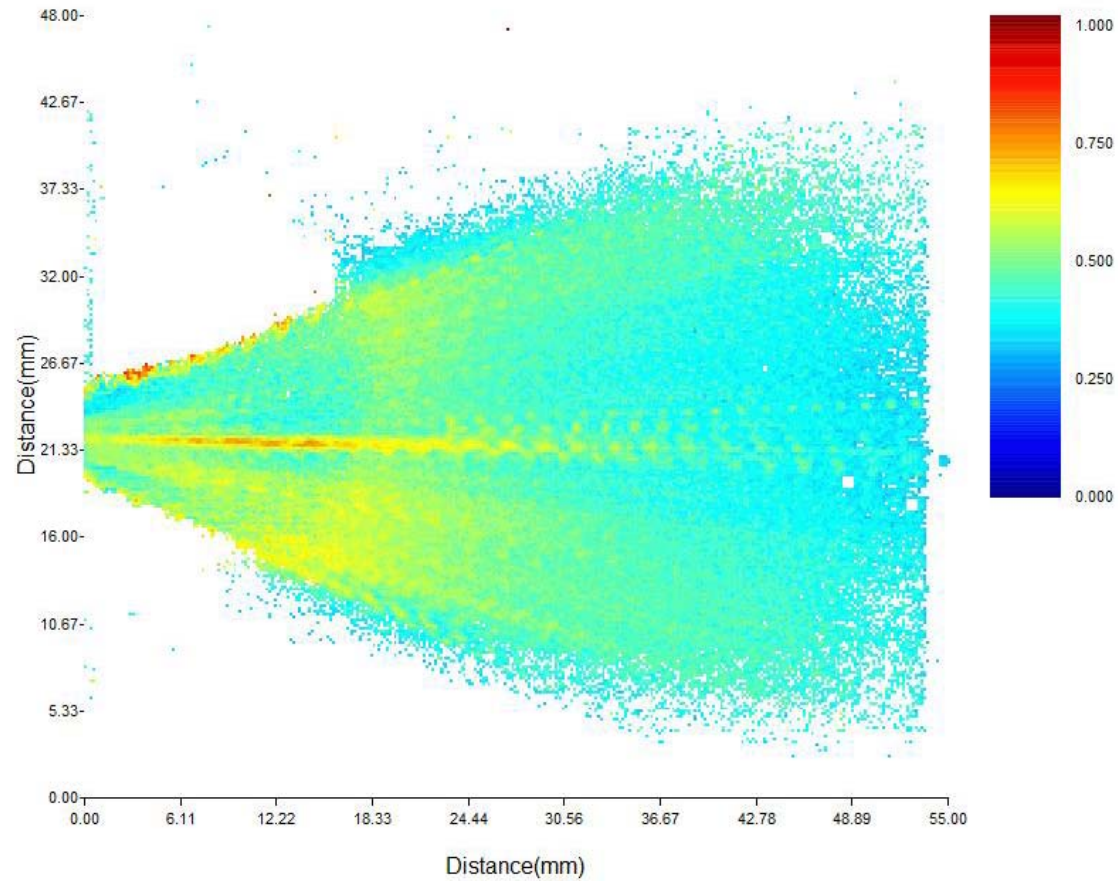
*Sequence of 2000 images obtained over a period of 20 ms is analyzed to provide velocity*



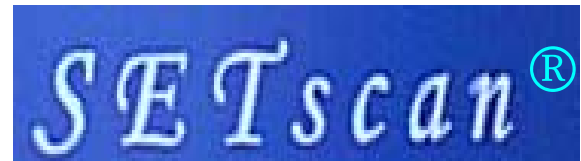
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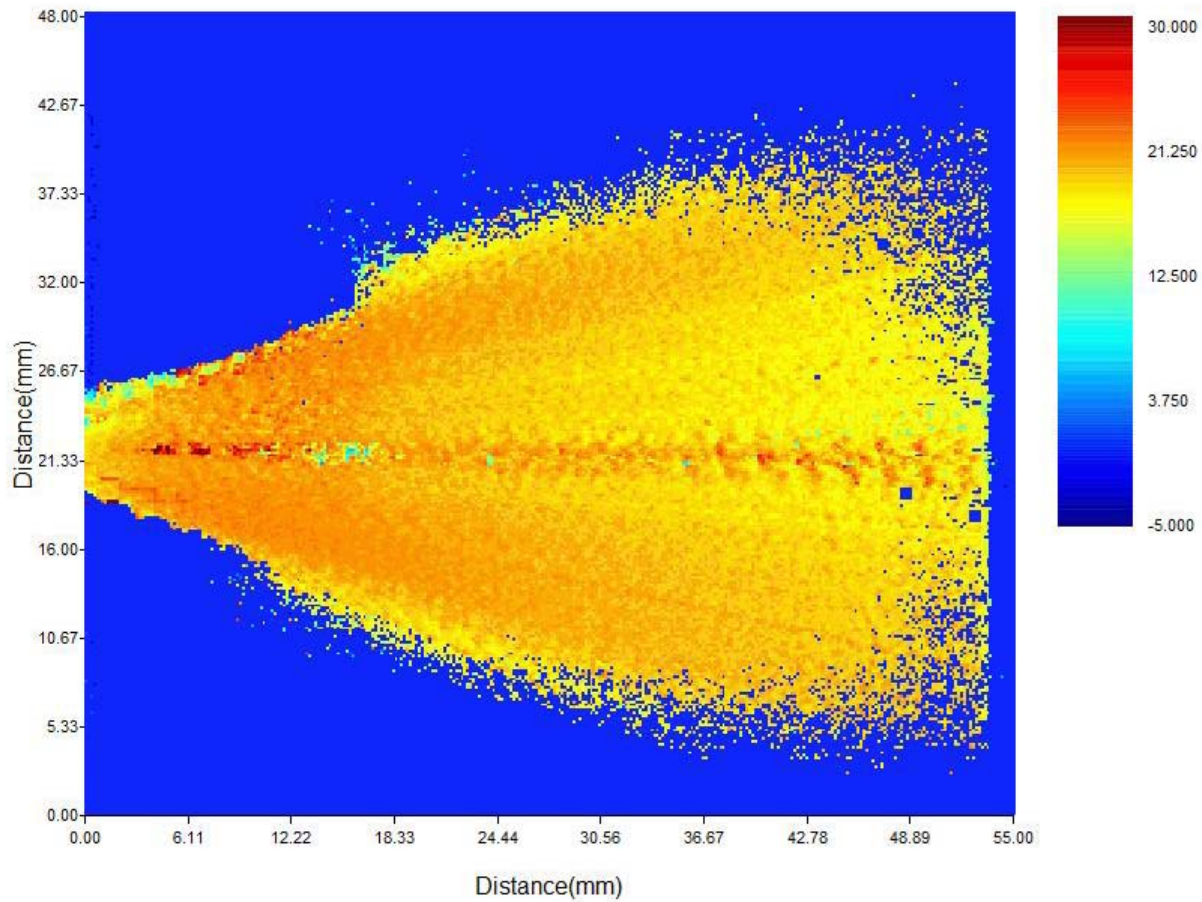
# Correlation Coefficient



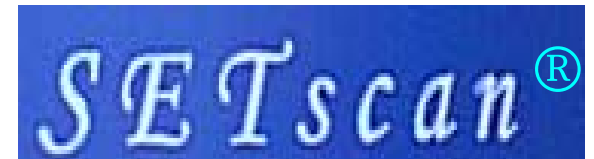
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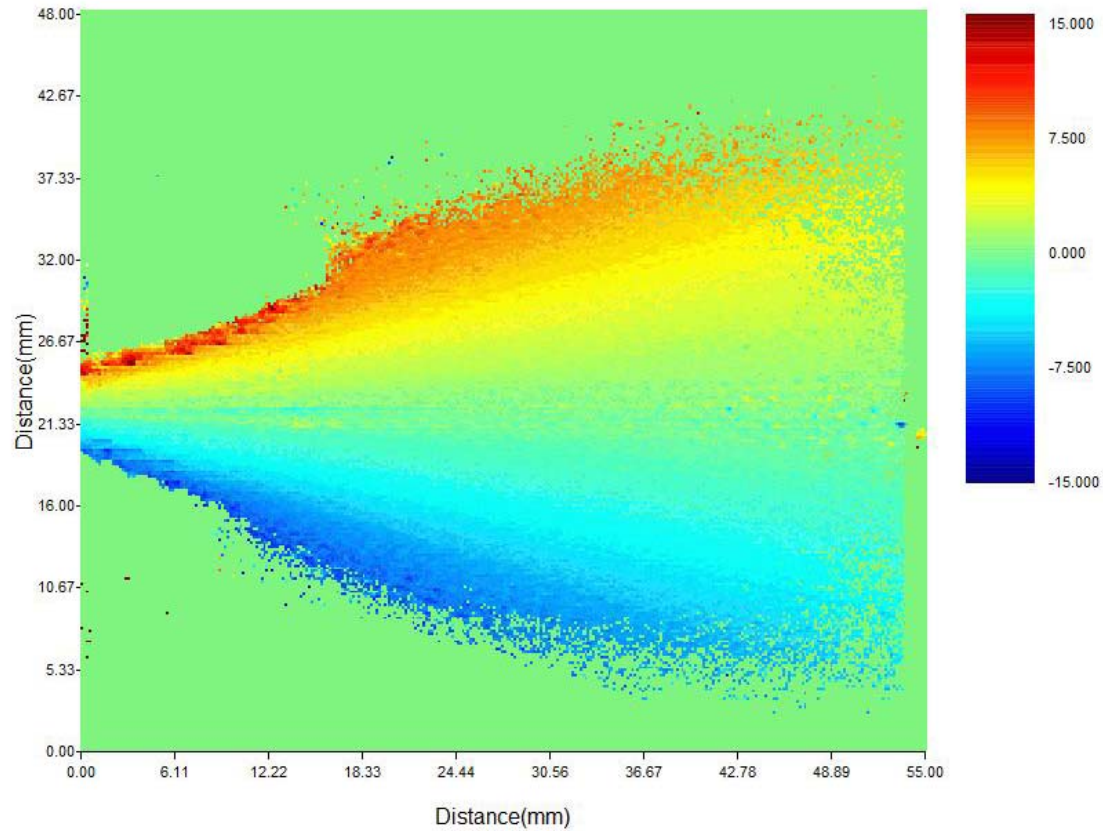
# Axial Velocity



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# Radial Velocity



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