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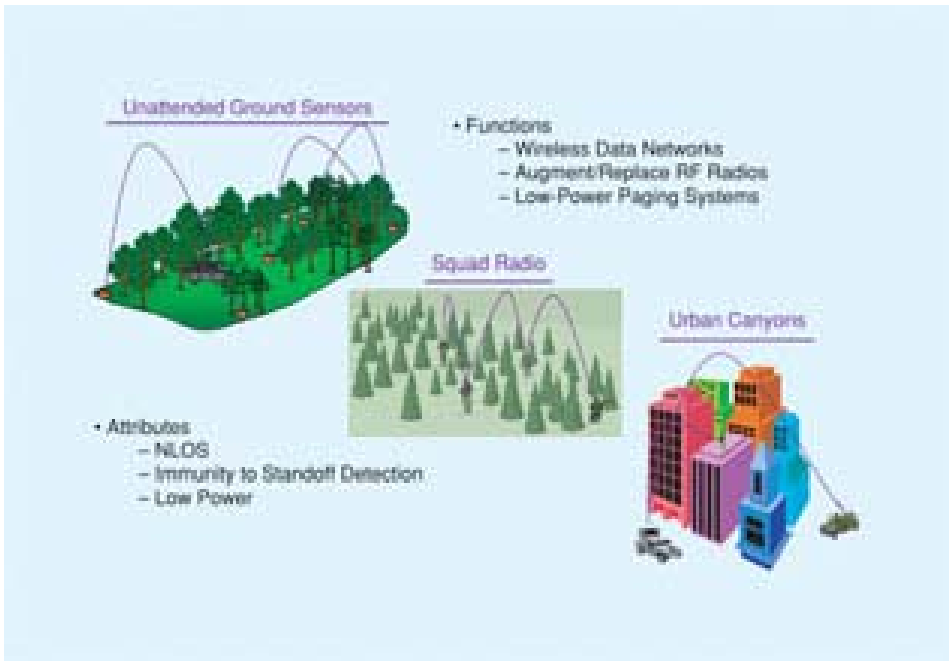
State-of-the-Art UV Projects

Recent developments in the arena of semiconductor emitters and detectors operating in the UV solar blind region have opened the door for Ultraviolet Non-Line of Site (UV-NLOS) communication links technology that take advantage of atmospheric interactions with UV radiation to host outdoor free space optical channels characterized by low power, low observability, and ability to work around local area obstructions.

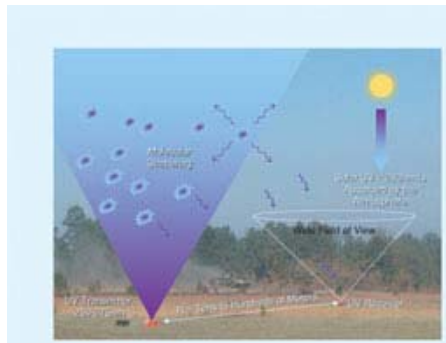
Target Recognition



Through battlefield obscurants

Over ground FSO communications

FSO links



Sensor LANs

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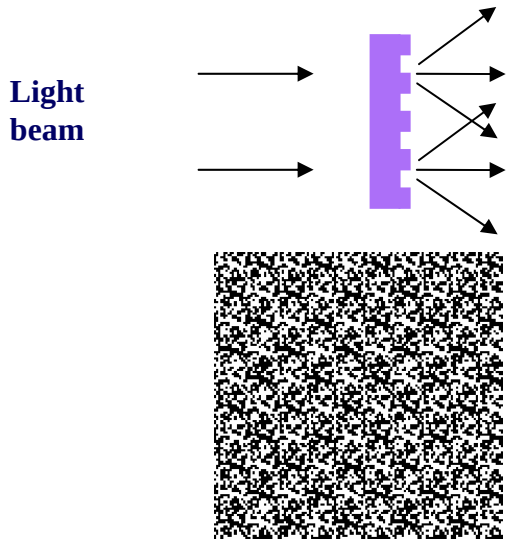
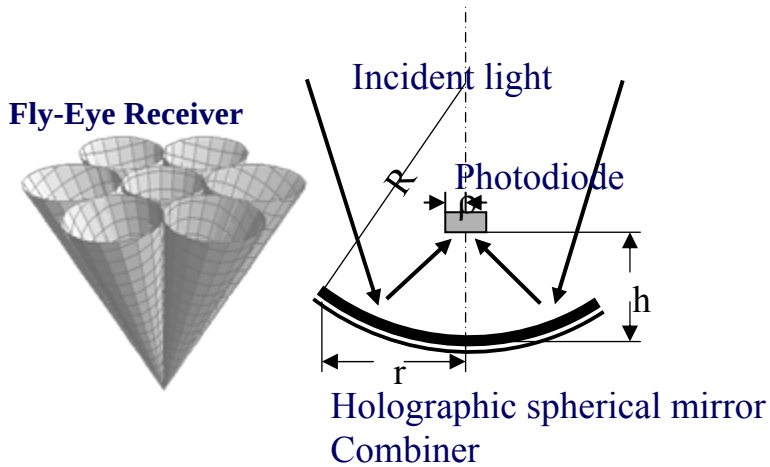
UV Applications

- Unattended ground sensor LANs or micro-air vehicle to ground communications
- Shot-range Free-Space Optical (FSO) Communication Links
- Missile launch detection
- Chemical and biological agent detection
- UV radiation meters
- Short-wavelength semiconductor lasers for optical storage
- Water purification
- Photolithography.

Imaging Communications Subsystems

Beam Splitter Phase Hologram





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UV Imaging Applications

- To resolve smaller structures, reduction of wavelength is the most practical and effective solution.
  - Alternative to IR links in imaging is ultraviolet imaging.

- Ultraviolet technology opens up a promising and challenging future for microscopy imaging and micro-defect inspection.
- Navigation, such as landing aid for aircraft in fog.
- Solar blind imaging arrays are ideal for detecting high-energy propulsion systems traveling through the atmosphere from ground to an altitude of about 10 kilometers.

- Semiconductor/Wafer Inspections.
- Biological, such as phosphor fluorescent technology.
- Biomedical, such as DNA analysis.
- Astronomical, such as planetary objects.
- Environmental monitoring, such as oil spills.
- HV electrical transmission lines monitoring, such as corona effects.
- Imaging of invisible flames (e.g. hydrogen and alcohol flames).

Battlefield Obscurant Scattering Modeling

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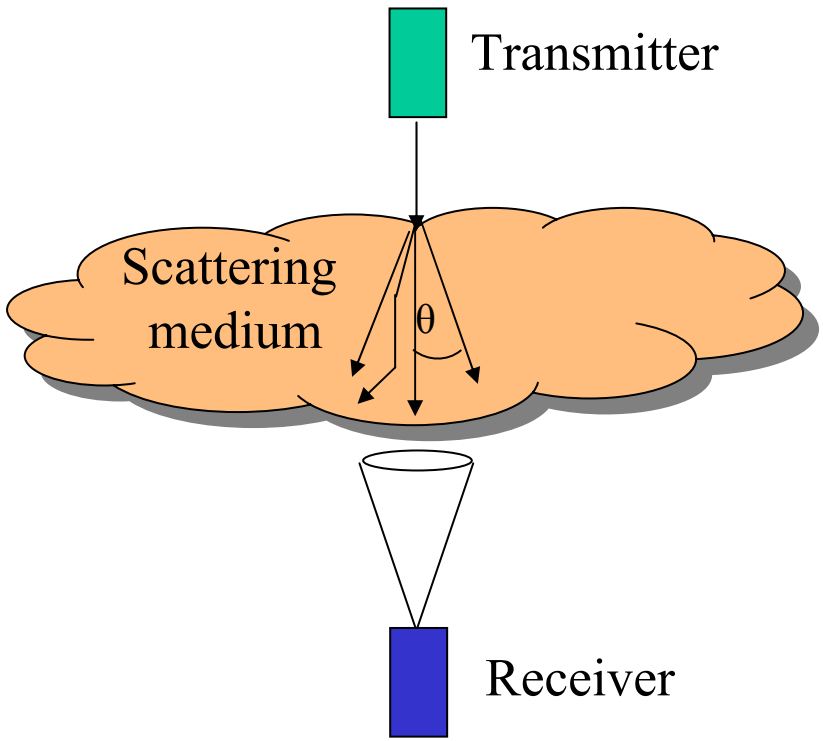
- UV range models for correlating distribution of scattering (temporal dispersion, angular dispersion) vs. scattering angle at exit plane with Line-of-Sight attenuation, such that an appropriate receiver can be designed.



θ: Scattering angle at exit plane

THANK YOU !