

# Hoes and Does

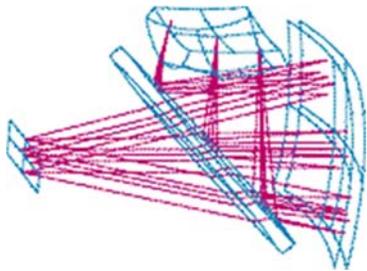
Also see a sample of common DOE surfaces.

- Complete Spectrograph designs and brassboard prototypes, diffractive component production for the same
- Transmission gratings from 10 to 4000 l/mm, plane, slanted, crossed, cophasal, multiplexed spatially or stacked in volume from spectroscopic instrument to light show quality, in DCG, photopolymer, resist or plastic replicas.
- Powered transmission HOEs of f/2 or greater with low aberrations, apertures to 1 meter and wavelengths from 355 to 1064 nm, for LIDAR applications.
- Off axis Multifocus hololens and flys eye arrays, optical interconnects and general multiplexed powered optics.

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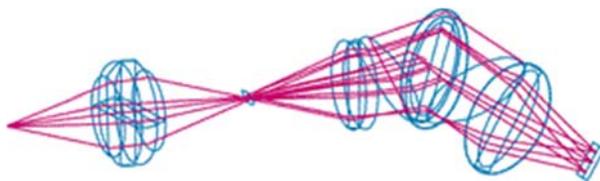
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### "Catadioptric HMD"



- Narrow Notch filters from 400 to 900 nm, 10 to 40 nm bandwidth, Optical densities to 5 or 6 in 30 microns of DCG.
- Directional diffusers, dipixelators and homogenizers in virtually any configuration, (design, fabrication, and production).
- HUD and HMD components including conformal multiwavelength combiners on CR 39 or glass of any radius.
- TIR gratings for photon buckets, edge lighting, polarizing.

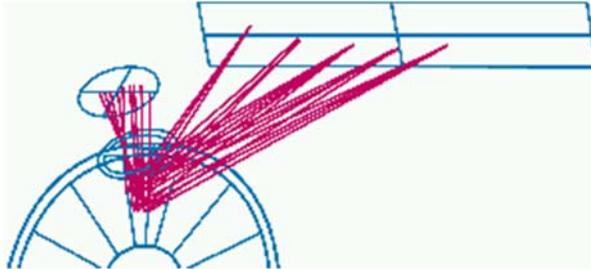
### "Transmissive Grating Spectrograph"



- Bidiffringent polarization separator that works in a Wollaston configuration and broadband planer polarization splitters.
- Complete ZEMAX optical designs including binary surfaces, masks and phase only replicas in volume or surface media.

- Hybrid refractive/diffractive design and fabrication.

### "Powered Laser Scanner"



- In-house lithographic photoreduction for some DOE production.
- Conversion of customer generated amplitude masks to efficient phase DOEs and HOEs.
- IR gratings for 3 to 12 microns in slumped amorphous IR glasses.
- Addition of high frequency carriers to low angle CGHs.

**The odds are in your favor, that we can make the HOE you need.**

## Advantages of DOEs

1. Simultaneous performance of several functions such as [deflection](#), focusing, filtering, and collimating as in bar code scanners.
2. Parallel performance of similar or different functions such as the multifocus Hololens array for parallel pattern recognition.
3. Ease of stacking elements such as multi-wavelength solar reflectors.
4. The formation of optics on curved substrates such as heads up displays on visors or curved windshields.
5. Weight and volume of a holographic system is likely to be less than refractive optics, especially for large apertures.
6. Ease of replication makes production fast, inexpensive and relatively simple.

*Last modified on 9/16/97*