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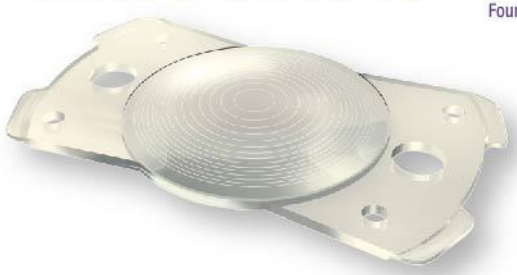
For Presbyopia, RLE

TRANSFORM WITH ALSAFIT FOURIER

Fourier Harmonic Optic Presbyopia Correcting IOL



Total Presbyopia Correcting IOL with

Fourier Harmonic Optic

and

Reverse Apodization

Patent Pending

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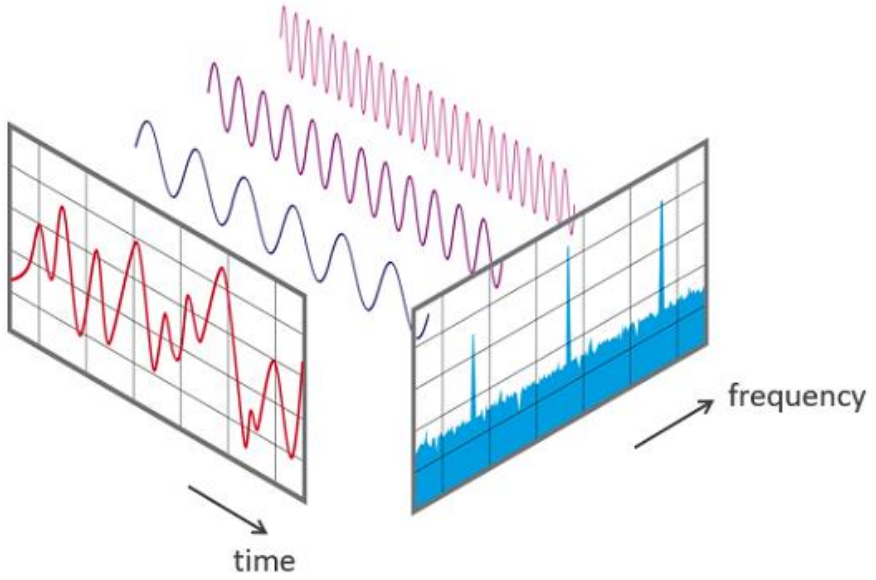
What is Fourier?
What is Fourier Harmonic Optic?

Features & Benefits of
Fourier Harmonic Optic

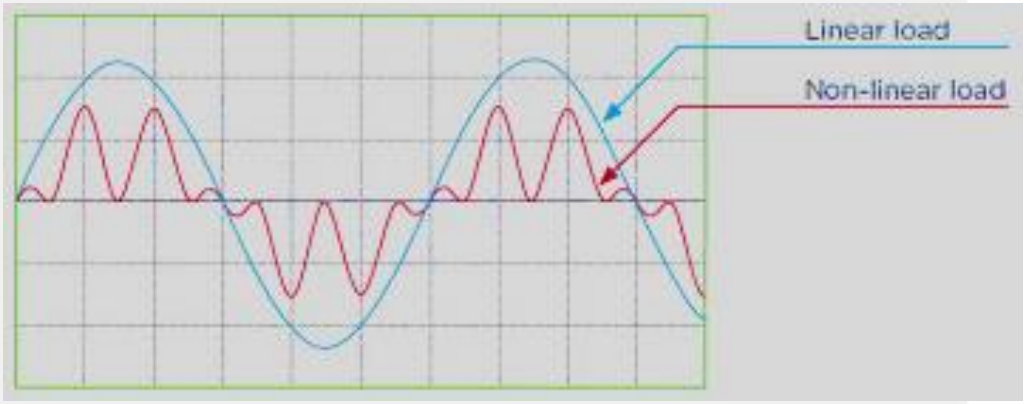
Fourier Harmonic Optic; a New Generation Continuous Focus

What is Fourier?

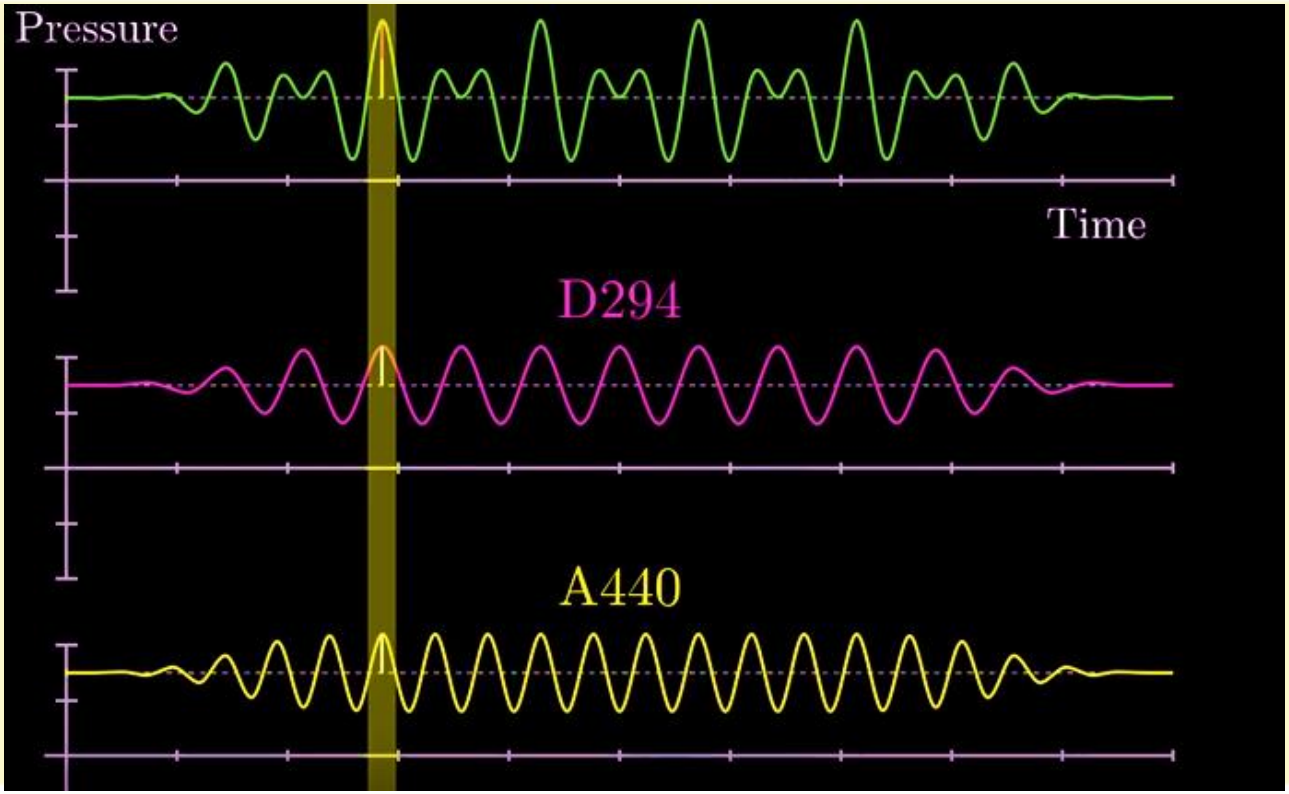
Fourier transform is used to write any periodic function as a sum of cosine and sinus functions. It is basically **aproximating functions in time domain to frequancy** domain or non-linear function to linear function.



Harmonic Transform



How does Fourier Transform work?



Non linear function

Linear functions

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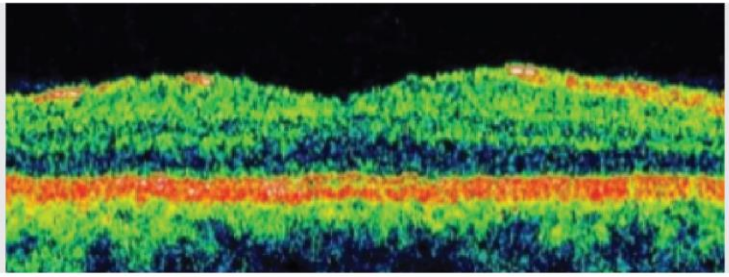
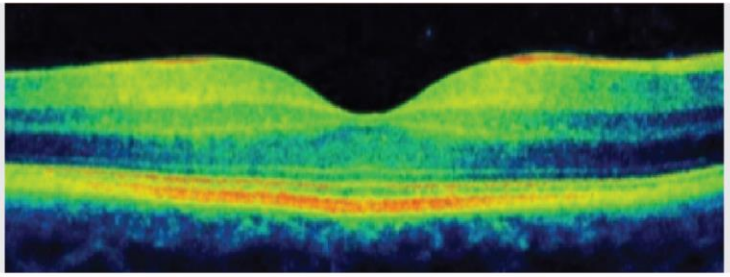
Benefits of Fourier Transform in Ophthalmology

Time Domain OCT		Fourier OCT
• 512A-scans per second	Faster	100,000 A-scans per second
• Resolution : 10µm	Higher	Higher Resolution: 3µm
• Slower than eye movement: Poor image quality	Better	Faster than eye movement: **Improved image quality**
• Low signal/noise ratio	Higher	**Higher signal/noise ratio**





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Traditional Overlapping Fresnel Diffractive Designs

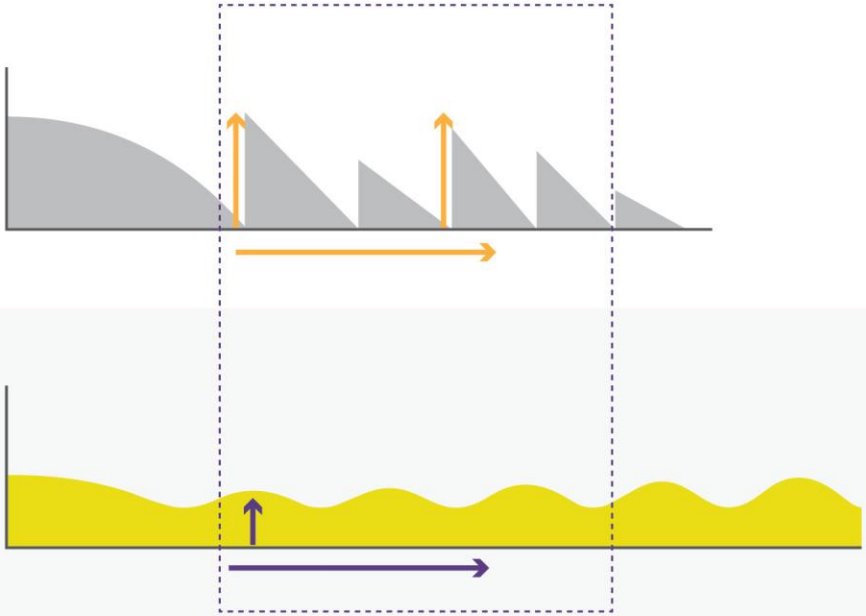
To

Fourier Harmonic Optic

Lower light transmission	→	Higher Light Transmission
Glare and Halo	→	Mimimized Glare and Halo
Three foci	→	Continuous Focus
Loss of Contrast Sensitivity in mesopic conditions	→	Enhanced Contrast Sensitivity in mesopic conditions

We Transform Tradition with Fourier

Traditional Overlapping Fresnel Diffractive Design



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Fourier Harmonic Optic Presbyopia Correcting IOL

Fourier Harmonic Optic

Undulatory Diffractivity

No Sharp Edges

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Fourier Harmonic Optic

Near	Intermediate	Far
+3.55 D	+1.77 D	
Near reading distance: 35 cm	Int. reading distance: 70 cm	

Total Presbyopia Correcting IOL with

Fourier Harmonic Optic

and

Reverse Apodization

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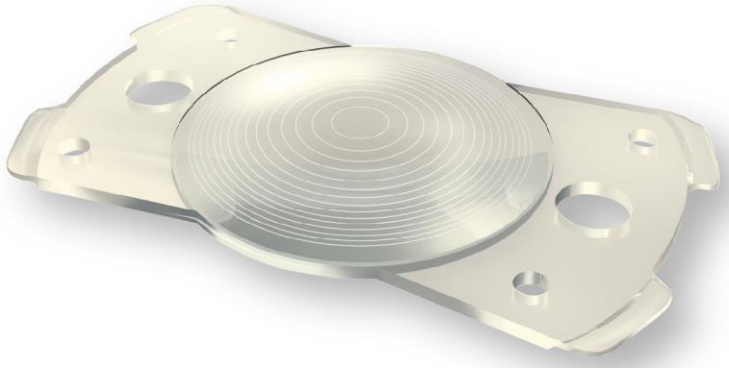
Meet with ALSAFIT FOURIER

Harmonic Optic

ALSAFIT Fourier is a **total presbyopia correcting IOL** with Harmonic Optic design



Traditional Overlapping Fresnel Diffractive Design

Fourier Harmonic Optic with Reverse Apodization

is developed to achive perfect vision at all distances and light conditions.

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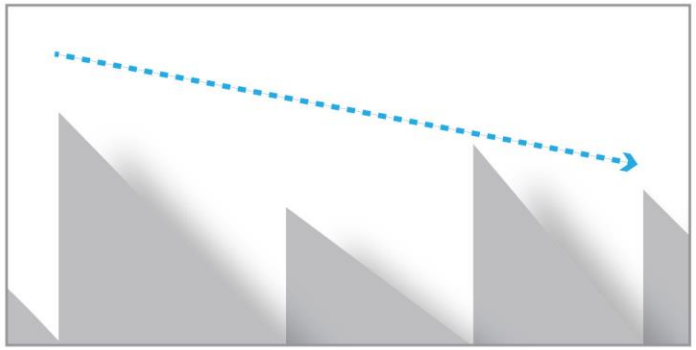
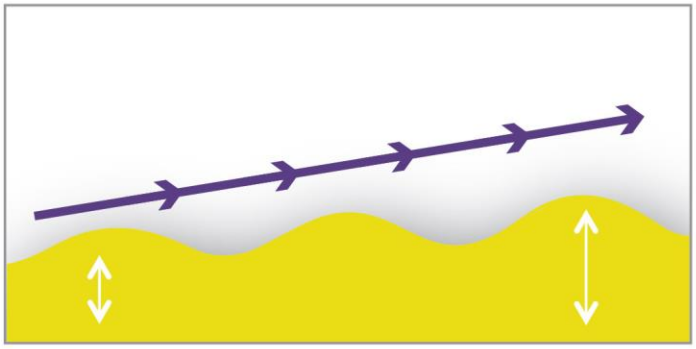
Harmonic Optic with Reverse Apodization

Apodization



Height of the diffractive steps decreases from central to peripheral.

Reverse Apodization

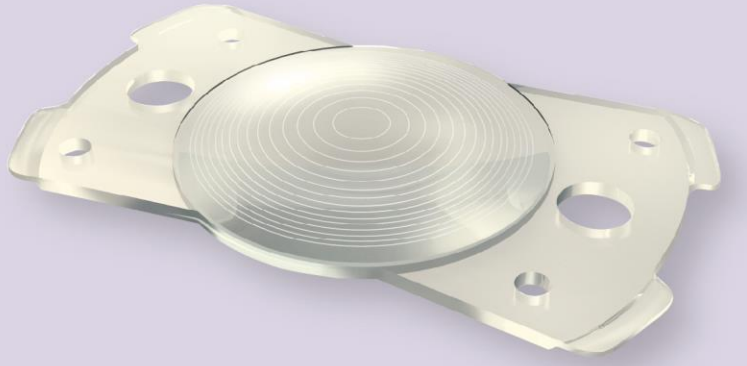


Height of Harmonic waves increase from central to peripheral.

LET'S REMEMBER

What was the meaning of 'height' of diffractive steps?

The **height of the steps** determine the quantity of **energy transferred** between near, intermediate and far vision. The **higher the steps are more energy to near vision**.



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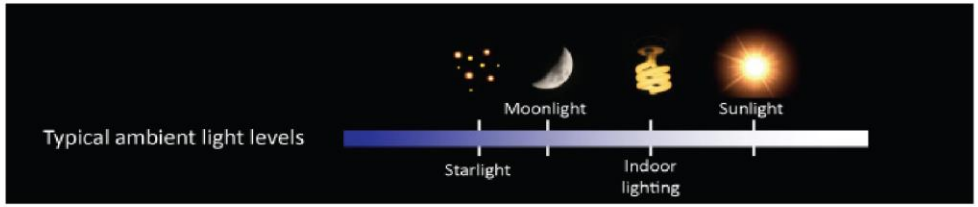
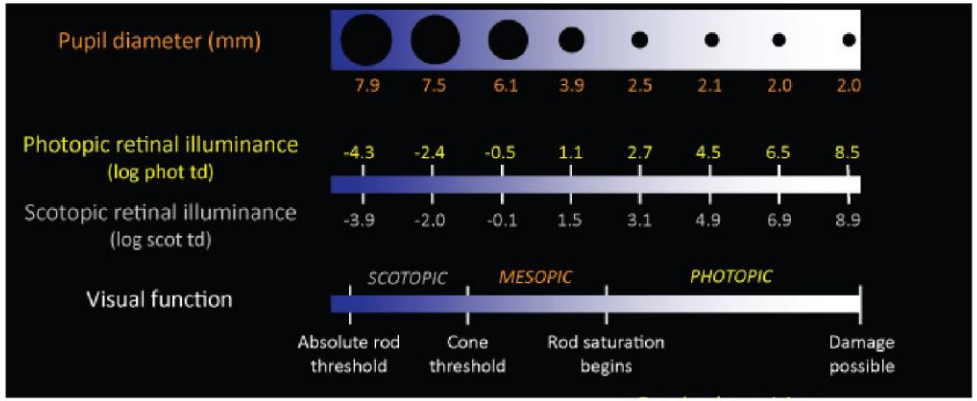
Why Reverse Apodization?

Reverse Apodization maintains **continuity of optimal light distribution** and **continuous focus** regardless of lighting conditions.





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Harmonic Optic with Reverse Apodization

Reverse Apodization ensures **higher energy distribution to Near in Mesopic condition.**

Fourier Harmonic Optic with Reverse Apodization

Lower contrast sensitivity of conventional fresnel diffractivity

Near **contrast sensitivity is maintained in low light conditions** as well .

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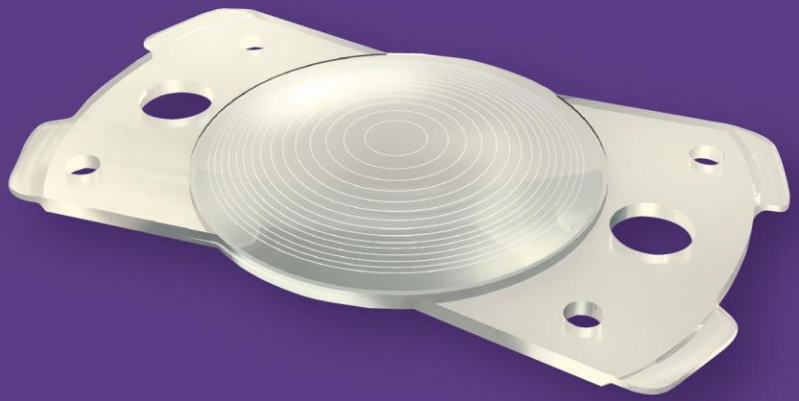
Benefits of Fourier Harmonic Optic

Highest Light Transmission

Continuous Focus

Enhanced Contrast Sensitivity



Dynamic Light Distribution

Minimum Glare and Halo

Spectacle Free Vision

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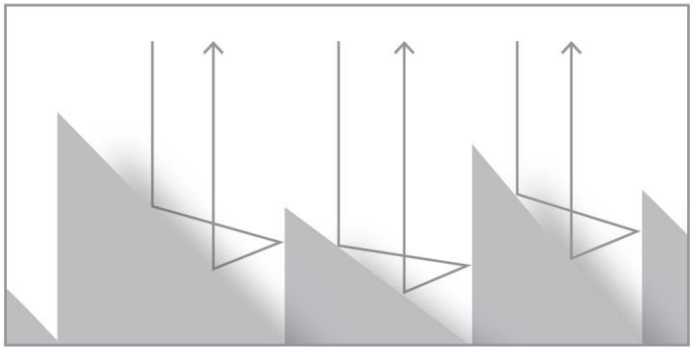
Benefits of Fourier Harmonic Optic

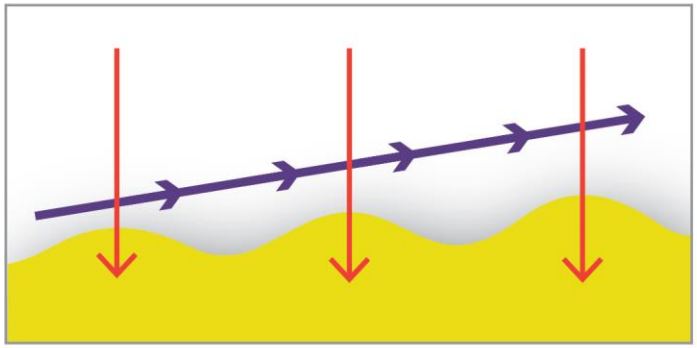
Highest Light Transmission

ALSAFIT FOURIER provides **%91,4 Light Transmission** with its patent pending Fourier Harmonic Optic Design. Undulatory diffractive profile transmits large part of the light to retina by reducing reflected light.



Classical Sharp Transition Steps

Light loss (12 to 15%)



Fourier Harmonic Optic

Undulatory diffractive profile

Light loss 8,2%

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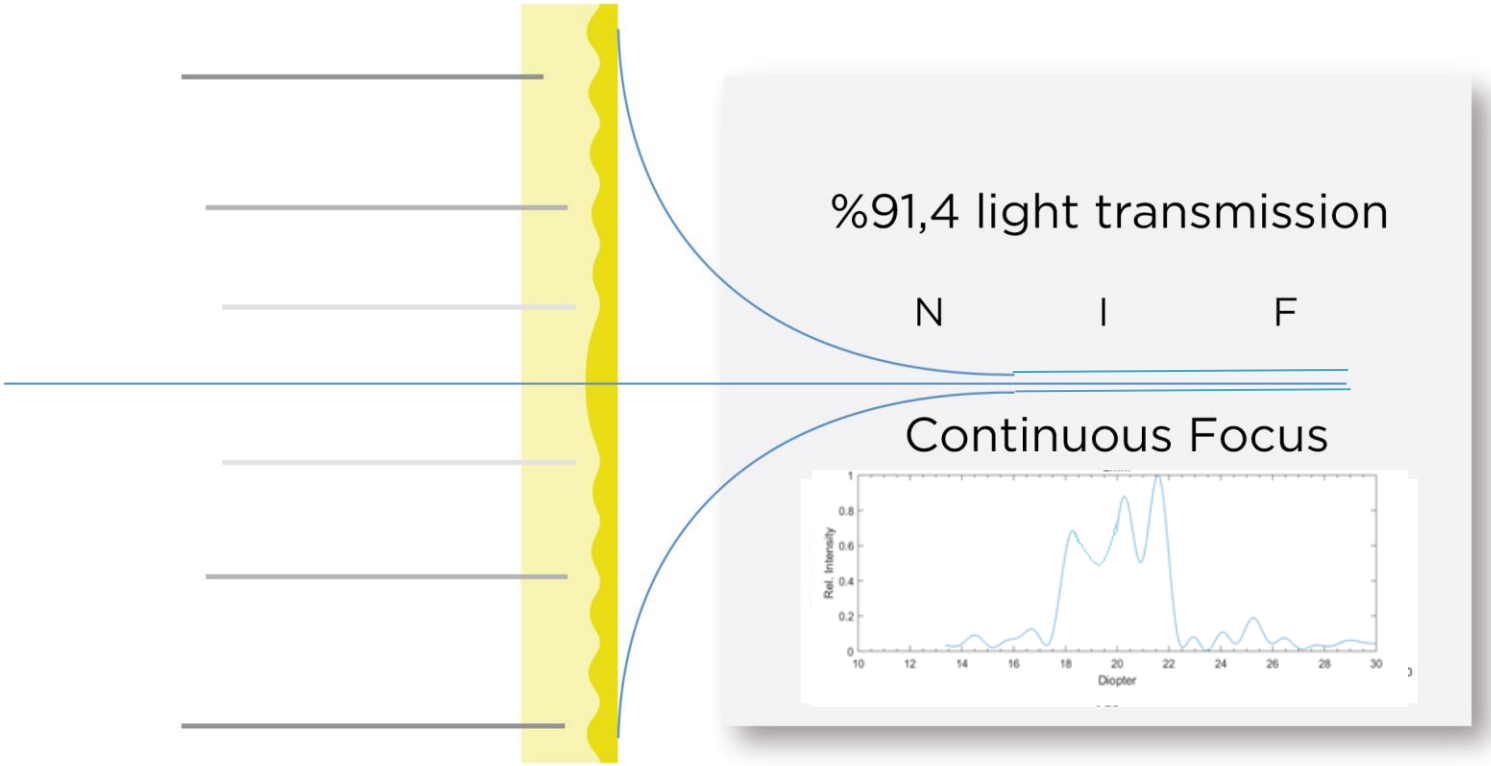
Benefits of Fourier Harmonic Optic

Highest Light Transmission



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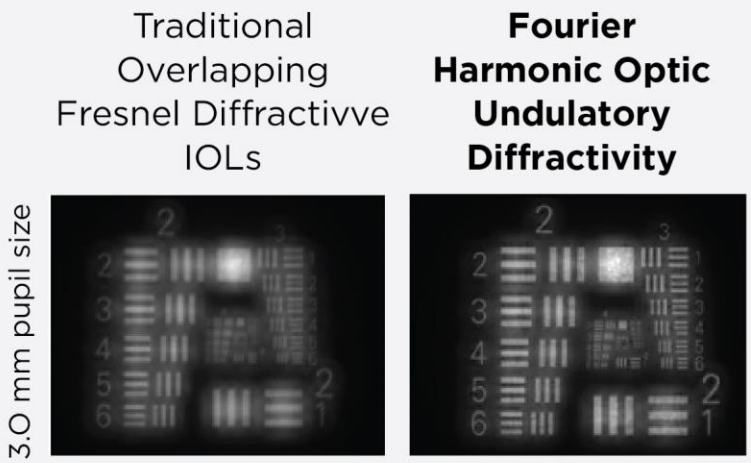
Benefits of Fourier Harmonic Optic

Light Transmission in Overlapping Fresnel Diffractive IOLs

Traditional overlapping fresnel diffractive IOLs exhibit important light loss (12 to15%) which directly effects visual performance .

Light loss will cause **loss of contrast sensitivity** and **visual acuity**.



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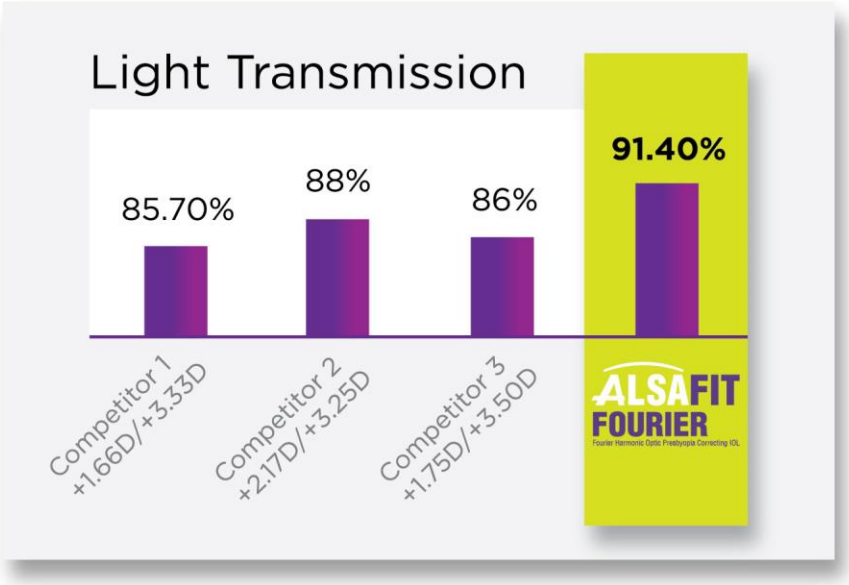
Benefits of Fourier Harmonic Optic

Highest Light Transmission

Fourier Harmonic Optic designed
with Undulatory Diffractivity provides
Highest Light Transmission



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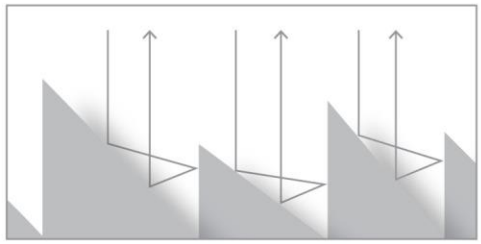
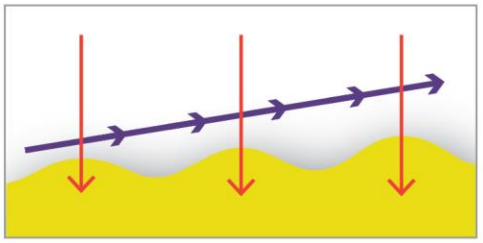
Benefits of Fourier Harmonic Optic

Minimum Glare and Halo

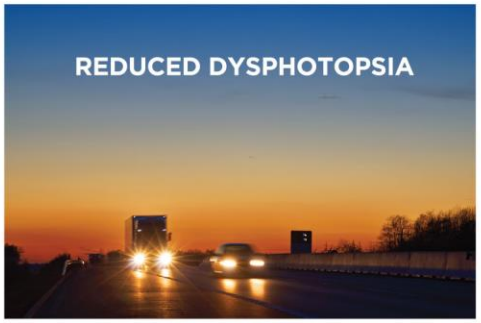
Soft and undulatory design of Fourier Harmonic Optic Minimizes dysphotpsia



Classical Sharp Transition Steps



Fourier Harmonic Optic



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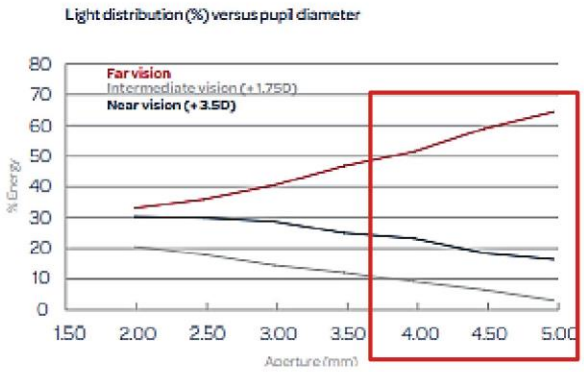
Benefits of Fourier Harmonic Optic

Spectacle Dependent Traditional Overlapping Fresnel Diffractive Trifocal IOLs:

Distributed energy to Near and intermediate **extremely decrases** in mesopic conditions

Alsafit Fourier Dynamic Light Distribution

Loss of light; Loss of Contrast Sensitivity



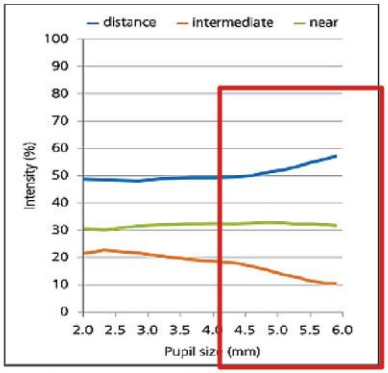
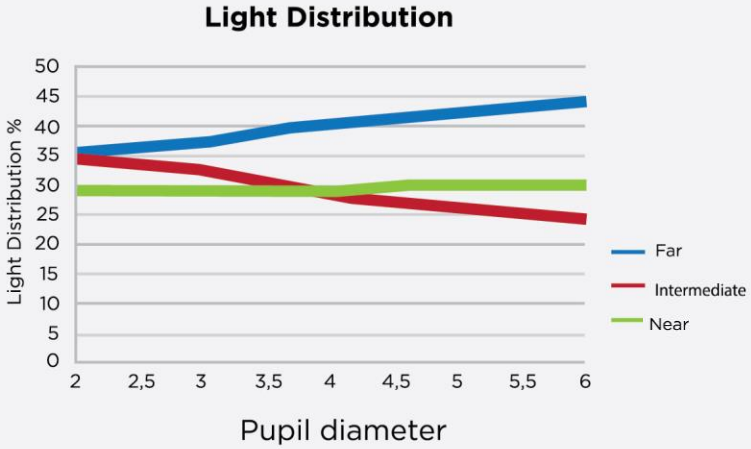


Figure 1. Light distribution of the AT LISA tri.



Enhaced contrast sensitivity at all distances

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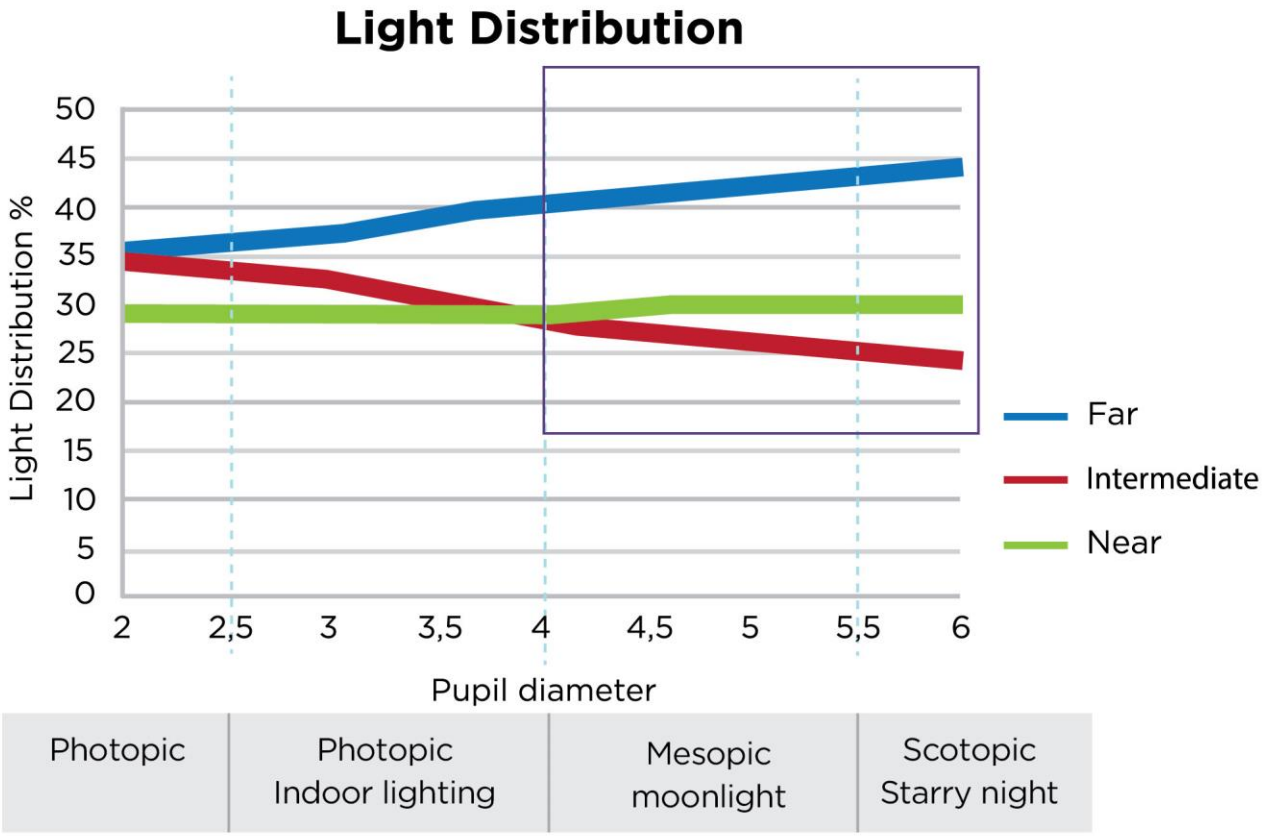
Benefits of Fourier Harmonic Optic

Dynamic Light Distribution



Enhaced contrast sensitivity at all distances

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Benefits of Fourier Harmonic Optic

Spectacle Free Vision

- Far light distribution increases from photopic to mesopic

- Near light distribution is preseved from photopic to mesopic

Together with increased far light distribution,
preserving near light distribution provides
spectacle free vision in mesopic condition

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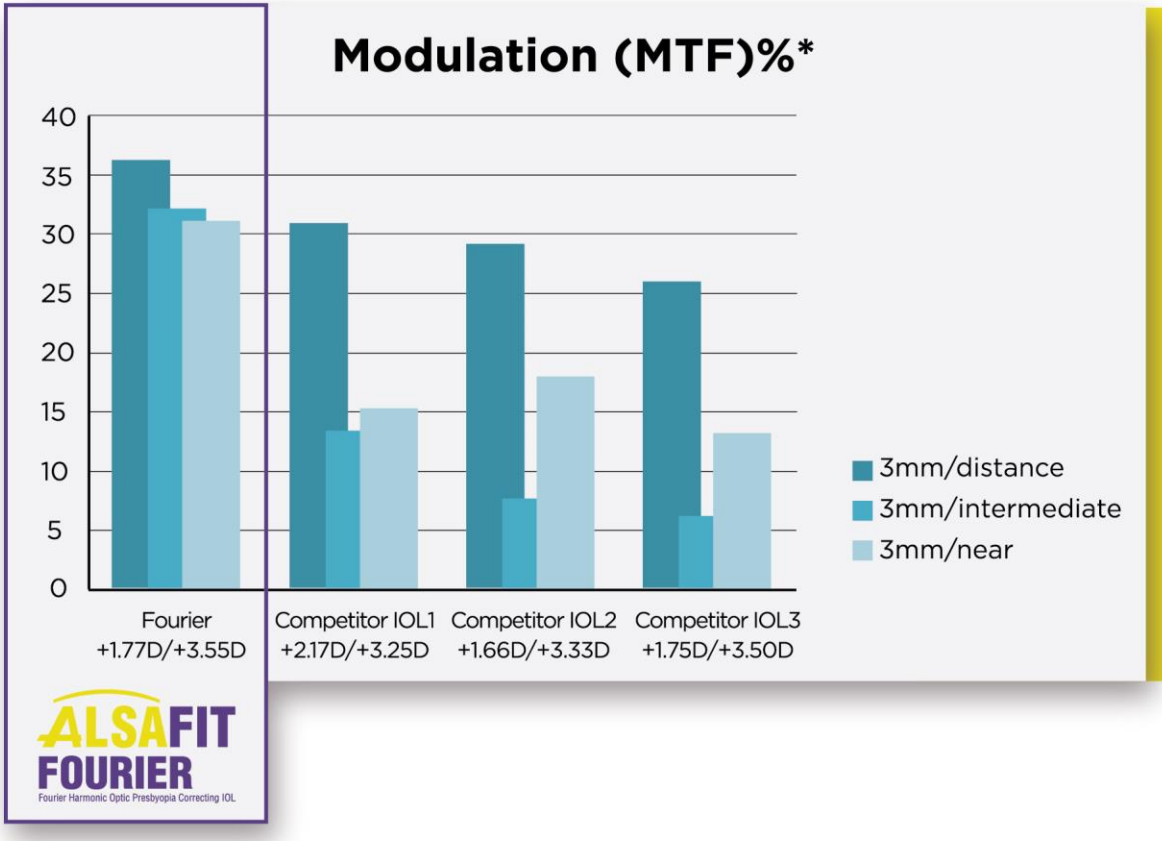
Benefits of Fourier Harmonic Optic

Continuous Focus with Harmonic Optic



The only IOL continues to perfom high MTF values at all distances

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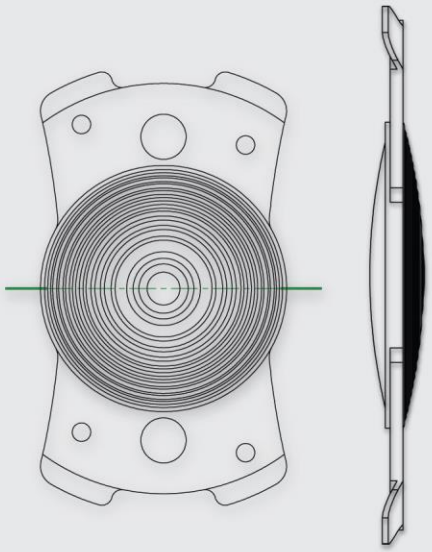
Other Features:

- 24H Asphericity: -0.09Qm
- Fins4FIT Haptic Design with Suspensive Corner Fins
- 11mm Overall diameter
- Smart Matrix Material: Interpenetrating Polymer Network of Hydrophobic and Hydrophilic Acrylic
- Diamond Cut Edge
- Suitable for Micro Insicion Cataract Surgery (MICs)
- Violet-light Filter
- 0.0D to 32.0D Diopter Range with High Dioptric Accuracy



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Thank you