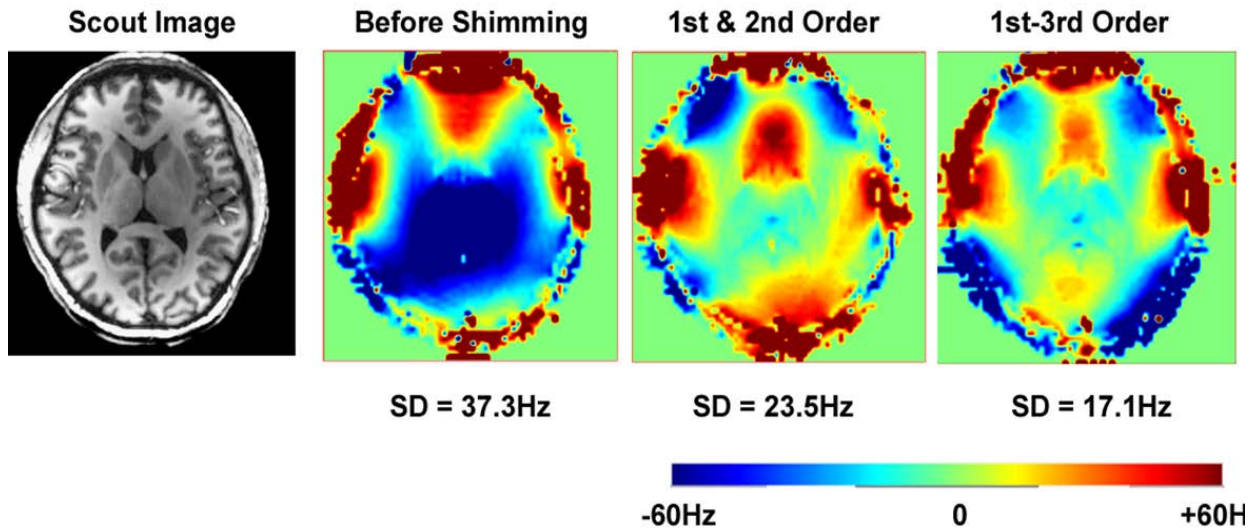


# Optimizing Human Head MR at 3T, 7T and Higher Fields

Currently for Pre-Clinical Research Only  
 Regulatory Certifications In-Progress

## Cancelled susceptibility artifacts and distortion

RRI's high order shim insert (HOS) addresses the strong susceptibility shifts arising from the frontal sinuses, oral cavity and auditory canals during MR at 3T and higher fields. These shifts, which cause artifacts such as dropouts, signal voids and poor SNR, result from higher order field harmonic spatial terms and cannot be cancelled in standard commercial scanners, where shimming of impurities is implemented up to the 2<sup>nd</sup> order only.



### Applications

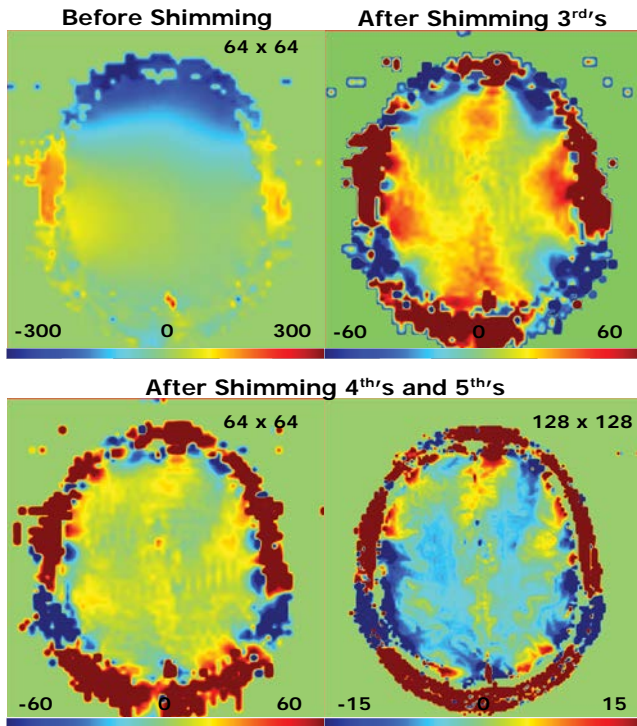
Advanced head MR at 3T and higher fields, particularly of temporal and frontal lobes

fMRI BOLD, susceptibility weighted imaging and other methods that derive contrast from T2 weighting

High resolution MR spectroscopy

# Optimizing Human Head MR at 3T, 7T and Higher Fields

## Benefits



Courtesy of Dr. H. Hetherington.

- Proprietary technology prevents shim to gradient coil coupling during pulsing sequences
- Improves data in non-axial orientations in true 3D studies
- Generous bore size easily accommodates complex RF coils, including multi transmitter arrays
- Short bore design does not interfere with patients' shoulders
- Mechanically compatible with most commercial scanners
- Insert installation or removal can be performed in approximately 20 minutes
- High shimming efficiency at low power levels
- Can be supplied with matching high bandwidth shim amplifiers, compatible with commercial consoles
- Expands the capabilities of standard scanners

## Specifications

### Shim Strength, mHz/cm<sup>n</sup>/A

#### Specifications subject to change

Shim channel		strength
Z0	Hz/A	6000
Z2	mHz/cm <sup>2</sup> /A	6900
Z3	mHz/cm <sup>3</sup> /A	490
Z4	mHz/cm <sup>4</sup> /A	42
ZX/ZY	mHz/cm <sup>2</sup> /A	2300
C2 / S2	mHz/cm <sup>2</sup> /A	3640
Z2X / Z2Y	mHz/cm <sup>3</sup> /A	1000
ZC2 / ZS2	mHz/cm <sup>3</sup> /A	1770
C3 / S3	mHz/cm <sup>3</sup> /A	185

#### Mechanical and Electrical Characteristics

Shim channels	14
Max current / channel	10 A
Internal diameter	402 mm
External diameter	465 mm
Length	730 mm
Weight	~ 60 kg

#### Installation

The HOS can be installed in most commercial scanners without requiring major hardware modifications. Installation requirements and procedures vary depending on the scanner type and make. Water cooling is required. PT-100 temperature sensors are provided (up to 6 ea.). Safety interlocks, transport and initial installation devices are included.