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Subject: Pi Speakers FAQ

Posted by [Wayne Parham](#) on Sat, 06 Oct 2012 04:15:02 GMT

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access all of it easily. However, this page offers introductory answers to frequently asked questions about our line of loudspeakers and the design philosophies we embrace. Click on a subject heading below to view questions and answers relating to your selection. Links throughout the answers will guide you to further information on our website or from other sources. Should you have any further questions, please ask in a related thread or write a new topic.

#### General Information

High-Fidelity Uniform-Directivity Loudspeakers

Uniform Directivity - How important is it?

Notes for the DIYer

Pi horn design philosophies

My personal opinions of various design philosophies

#### Corner pi speakers

Surround voicing and matching the mains

#### Models, Upgrades and Driver Characteristics

Info to compare Pi models

Options in a nutshell

Upgrades

Electro-mechanical properties and diaphragm motion

Magnet structures

Push-pull verses shorting rings

12pi push/pull benefits

Heat exchanger effectiveness

Speaker Voice Coil Cooling System Valve

Radiant Cooling System (Cooling Plug) Patent

#### Cabinet Design

Hoffman's Iron Law

Vented Speaker Systems

Response curves of closed vs. vented systems

Speaker damping - Overdamped, Underdamped or Critically Damped

Acoustic filter Q and PiAlign's "Qe"

Pi Alignments compared with B4, C4 and QB3

Helmholtz formula

Helmholtz frequency of each model

Displacement calculations (or measurements)  
Cabinet design, port placement and internal standing waves  
Golden ratio for loudspeaker cabinets  
Trapezoid enclosures  
Damping material placement  
Altering dimensions

## Horn / Waveguide information

Basshorn or Transmission Line  
Midrange Horn  
Midrange horn shape in Pi cornerhorn  
H290C Horn/Waveguide  
Horn phase  
Pattern control and mouth size  
Horn/Waveguide dimensions and beamwidth  
Matching directivity in the vertical and the horizontal planes

## Crossovers

Speaker motors and passive crossover filters  
Crossover Electronics 101 Seminar Handout  
Phase angles, crossovers and baffle spacing  
Baffle spacing, phase angles and time alignment, revisited  
Tweeter circuits for constant directivity horns and waveguides  
Woofer size for uniform directivity loudspeakers  
Crossover configuration  
4Pi crossover study  
Baffle Step

## Room Effects and Loudspeaker Interactions

Constant directivity verses on-axis EQ for non-uniform directivity (aka baffle step filters)  
Loudspeaker sensitivity and boundary loading  
Boundary conditions and room interactions  
Boundary conditions and floor bounce  
Floor Bounce  
In-wall Baffle  
Imaging, placement and orientation  
Speaker placement and wavefront launch  
Corners and frequencies  
Room modes, multisubs and flanking subs  
Helper Woofer Location  
Flanking Subs vs Helper Woofers  
Benefits of Flanking Subs

## Simulations and Measurements

Spice crossover models  
Determining mechanical reactance values for Spice models  
Clarification of attenuation values  
DI-matched two-way loudspeakers  
Crossover optimization for DI-matched two-way speakers  
Crossover optimization for DI-matched two-way speakers, revisited  
The Acoustic Center: How it applies to Loudspeaker Measurements

Miscellaneous  
Mounting Screws and T-Nuts  
Gaskets  
Midhorn Bracing

R11/R13 Fiberglass Insulation and Environmental Health

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