
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.

Videos

Vertical Nulls - Acoustic Measurement, July 9, 2009

Emiko Carlin interviews Wayne Parham about the Lone Star Audiofest, January 30, 2025

Ken Schwarz interviews Wayne Parham at the Boston Audio Society, March 15, 2025

Jason of the Intellectual People Podcast interviews Wayne Parham, March 30, 2025

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
