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# STEREO

**THE GERMAN HI-FI MAGAZINE**

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**> APPLIED SCIENCE**

**Audionet  
raises the bar  
with Planck  
player and  
Watt amp**



**REVIEWS: ACCUPHASE E-370 AMPLIFIER, DYNAUDIO CONTOUR 60 SPEAKERS, PHONO STAGES COMPARED & VINYL LPS FLATTENED, NEWS – AND MORE!**

# PACE, ALGORITHMS & TIMING



Are the acoustics of your room ruining your listening enjoyment? Intelligent programs can improve your sound without the need for reconstruction. We put two of them to the test at Bremen's Studio 45.

**A**n important plus of a STEREO PREMIUM PARTNER is its competence, and the team Jörg Arlinghaus, owner of Bremen's Studio 45, has built is deeply immersed in digital room correction – which even in an environment optimized for HiFi can improve the sound significantly. For instance, Studio 45's large demonstration room is already top-notch: the company has tamed many acoustic pitfalls with hidden bass traps or ceiling absorbers, so that the frequency response at an average listening position presents a balanced curve with only slight spikes in the range between 80 and 200 Hz.

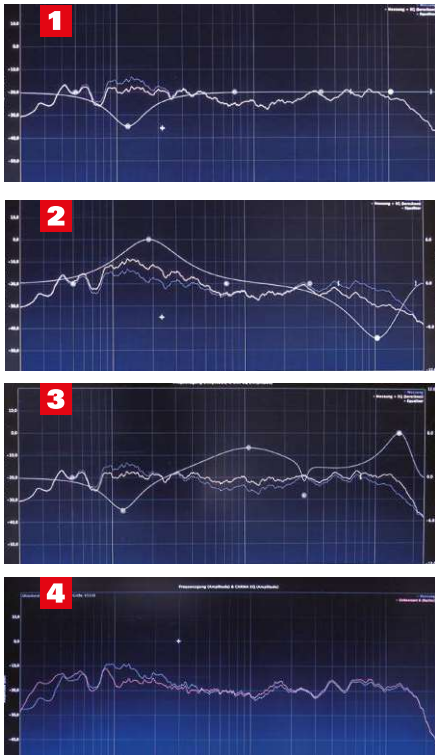
One would think this would leave little need or scope for optimization, but this latest the workshop applied two acoustics programs which record the room via microphone measurements and then calibrate to compensate for any weaknesses of the space: Lyngdorf's "Room Perfect" and Audionet's latest v4 iteration of its "CARMA (Computer Aided Room Analyser)" software.



„Until now I had mainly known mechanical means for improving acoustics, such as damping or reflectors, and digital technology purely as an analysis system. I was surprised and impressed that you can also effectively correct room errors with ‚Room Perfect‘ and ‚CARMA‘ systems“

➤ Workshop participant Marcus Kosche

◀ In the comfy, large Studio 45 listening room, the workshop demonstrated the performance of programs for acoustic room correction. The impact of Audionet's "CARMA" software was shown on a MacBook.



Frequency responses and correction curves with CARMA: the most natural reproduction came from pure bass management **1**. Raising the bass and lowering the treble made the sound muffled **2**. Linearization by filling the light dip in the mid-range plus raising highs also did not lead to good results **3**. This is how Room Perfect corrected for the room (pink curve) **4**.

The selection was not arbitrary, since Room Perfect (in this case built into Lyngdorf's TDAI-2170 integrated amplifier, which starts at €2800) is very easy to use, basically fully automated, while CARMA is managed externally via a PC or Mac and can be used in Audionet's streamer/DAC preamp DNP (ca. € 9990).

In our tests, the Lyngdorf amp was used with DALI Rubicon 6 speakers, at around €3700/pr, while the AudioNet preamp was used with DALI's Epicon 6 (ca. €9200/pr), driven by NuPrime audio monobloc power amps. C.E.C.'s CD5 CD player was used as the source for both systems.

We started with the Lyngdorf/Rubicon 6 system, and Christoph Bouet's furious "Suzanne" from the STEREO Phono Festival album. In its natural state, the powerful recording created a lot of sound pressure, which was well received. However, once we activated Room Perfect, the visitors noticed how muffled and thick the playback had previously been: with the equalization in operation the

lower registers tightened, and details and nuances, previously drowned out in a dense, dark cloud, became audible.

This also helped the midband and treble become more clear, free and spacious, and the sound detached itself from the speakers and stood more confidently in the room. Using the remote control to make A/B comparisons – Room Perfect on or off – it was astonishing that the linearization of mainly the bass also created more openness and grace in the higher ranges, although the system had made almost no corrections at all in these frequencies (see measurement).

It was great to hear in "Var nära mig", a seductive, finely-woven piece by the Goteborg Chamber Orchestra which has almost no bass, that the deep resonance of the church nave in which the recording was made played a part in smearing some detail. With Room Perfect correction, the projection became wider and deeper, and the multi-voice choir became airier and moved clearly away from the front of the soundstage.

We stayed with this piece and moved on to the AudioNet/NuPrime Audio/Epicon 6 we moved to the larger setup. While Room Perfect does not offer any means for subsequent adjustments, CARMA opens unknown possibilities to its users. We would soon see how useful they were in practice.

First we listened with a curve which was very similar to the Lyngdorf software – and achieved similar improvements, even



"I'd already experimented with room calibration via signal adjustment in the 80s, but in those days it was very complex and difficult. It is fascinating how much flexibility and certainty modern programs can offer listeners due to their sheer computational power."

> Workshop participant Frank Becker



"My insight from the workshop? Linearity at the listening space cannot be the goal of the correction. In this case the voices appeared overly present and sharp, even anemic. There was no warmth or sonority. It sounded more natural with slightly lower highs and less mid-range attenuation."

> Workshop participant Jan Schlotmann



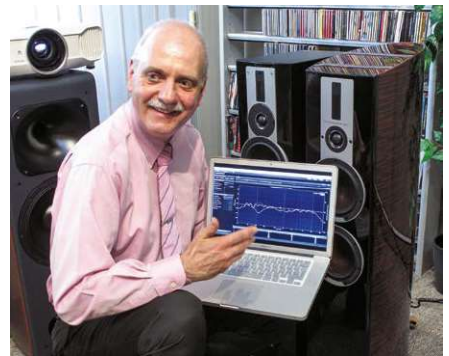
"The sound of my multichannel system clearly profited from the room calibration in the NAD-A/V receiver, so I wasn't surprised this also works for stereo. But I was impressed with how meticulously and precisely you can address acoustic problems with the 'CARMA' software."

> Workshop participant Oliver Entelmann



"A vivid and comprehensible presentation. I was particularly excited by the presentation of the different correction approaches. However, this is probably too complex for a layman and you would easily get lost in the multitude of possibilities, so it's good to have a dealer who knows how to use this stuff."

> Workshop participant Ernest Biermann



▲ Curve discussion with Matthias Böde: just because you can do something doesn't mean you should.

if at the higher level of the superior electronics and speakers. Again, the correction ensured improved clarity and transparency in the bass as above it. And again, the comparison was easy, as we were able to switch between corrected and uncorrected versions at the touch of a button.

This made us want to play around: would a bass emphasis deliver an even more impressive performance? The Bremen folks called up a corresponding preset, and – no thanks, much too thick! This emphasis is something only for Disco freaks, and nothing to do with natural sound. Clearly, just because you can do something does not mean you should.

This was sort of expected, but what followed wasn't: based on the dictum of the greatest possible neutrality we adjusted

For the workshop, two demo systems were set up for Room Perfect and CARMA in the already optimized Studio 45 listening room. ▶



„I have been fascinated by the topic of digital room correction for quite a while. I have delved into theory and practice around the subject. As owner of the Lyngdorf preamp DPA1 which comes with ‚Room Perfect‘ I am a big believer in this process, which sadly is still not quite recognized.“

▶ **Workshop participant Klaus Dorner**

for maximum frequency linearity in the listening space which, according to standard theory, would provide the best sound. However, when Sara Maria Anderson sang her “Jerry, Who Runs The Wine Shop” there were a lot of skeptical faces.

The sound simply had too much presence, the singer’s clear but never obtrusive voice sounding almost icy, and sibilants standing out sharply.

What was happening? Well, speakers are supposed to have a linear sound at short distances, but the room’s attenuation reduces high frequencies at the listening position, as also happens with natural sound. Adjusting for this natural attenuation makes no sense: the subjectively “correct” curve had reduced high frequencies as well as a little dip in the midrange, which Room Perfect predicted perfectly. This supports the sonority and expression without making the result too round or even full, showing that with competent advice and some experience you can quickly figure out how to use the algorithms for acoustics.

**Matthias Böde**



Room Perfect is integrated into Lyngdorf’s amplifier (right), with a measurement microphone included in the kit, while the AudioNet DNP digital network preamp corrects using CARMA. Since the signal processing is handled in the digital domain, we fed both systems with a digital source. ▼▶



**Y**ou can find pure HiFi spirit In Bremen’s Studio 45, directly by the flyover not far from Central Station, where you can see or hear something in every corner of the smart, well-organized business. The team, headed by owner Jörg Arlinghaus (middle), covers all areas of High Fidelity – from analog to PC audio, streaming, and modern media – with presentations on these topics set up in several acoustically optimized demo spaces. Tube fans or people interested in multi-room solutions can find something, and even home theater is represented by this freshly installed „Dolby Atmos“ system. Thorsten Kahle (right) is a speaker specialist who is familiar with all technical details, while Lars Gosler is the audiophile generalist – no wonder they enjoy a resounding reputation.

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