



Bruce Brown is at the controls for his presentation of DSD Demystified, while club members listen in awe.

## May 10th Meeting Recap by Bruce Brown

**DSD** is a method of storing a Delta-Sigma signal before applying a "decimation" process that converts the signal to a PCM signal. As a release format, SACD is the only one actually using this 1-bit data, but as an internal processing format it's surprisingly common. The vast majority of audio converters operate at 1 (or a few bits) at megahertz sampling rates. That means the audio in normal CD production started its life in a DSD-like format. To get to PCM, digital low-pass filtering and decimation is required. This is

mostly invisible to the user because converters ICs contain the decimation filter on-board, and put out PCM. But even if you're not aware of it, your PCM converter has quite a bit of DSD-like processing going on inside. While DSD is the format of choice for high quality recording and SACD mastering, digital editing is performed with PCM audio. This because every change that's made to the DSD audio stream will lead to a wider word length than 1 bit. Since a multi-bit signal at 2.8224 MHz has a data rate that's too high for practical use, DSD is converted to a lower rate

PCM format before editing. When Philips engineers were building DSD editing tools the design criterion was thus to find a PCM format that would not detract from the sonic capabilities of DSD. It was found that it was possible to convert a DSD signal to 352.8kHz/32 bit and back without incurring any audible quality loss, as long as good care was taken with the filtering and re-modulation stages. Later on this format was called 'DXD'. Conversion of DSD to DXD is performed 'on the fly' in Pyramix. In the Sonoma DAW, bits are added to the native sample rate.

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This leads us to the different DSD formats.

DSDIFF or .dff – this is the industry standard for DSD files. The industry standard for PCM files is .wav  
DSF or .dsf – This is the DSD equivalent of FLAC. This DSD format will allow you to attach metadata such as album art, track sheets and production information. WSD or .wsd – This is the Sony Japanese standard format used in VAIO computers and such.

**Sample Rates:** DSD comes in several sample rates. The most common is 2.8224MHz, also known as 64fs (1bit times 64 times 44.1 kHz). This is what a SACD is encoded with. DSD can also be found at 5.6MHz or DSD128fs, which is used in the Korg 2-track recorders. In research labs, DSD has been found at 512fs and 1028fs as well.

**Standard Methods of Delivery:** The Audio Engineering Society has developed standard protocols for digital transmission from one place to another. For DSD transmission, there are only 2 approved protocols. MAD1 (Multi-channel Audio Digital Interface), which can be over either SC or ST-optical. This also carries clock information as well. SDIF-3 is a single channel 75-ohm BNC cable. Since it's a single cable per channel, a separate word-clock interface is needed.

**Non-Standard Methods of Delivery:**  
HDMI – can carry up to 6 channels of DSD information. FW (Firewire) – is a proprietary protocol adopted by dCS and Esoteric to deliver DSD to their own transports and DAC's. There have been other companies to adopt this method as well by writing their own drivers (Mytek). USB-2 (Universal Serial Bus) – Is an open standard developed by Andreas Koch with backing from other manufacturers to get DSD into the hands of more consumers. You can read more about it here: [http://www.positive-feedback.com/Issue60/dsd\\_usb.htm](http://www.positive-feedback.com/Issue60/dsd_usb.htm)

**Compatible Players for DSD ISO discs**  
<http://code.google.com/p/sacd-ripper/wiki/SACDRCompatiblePlayers>

Cambridge Audio Azur 650BD  
Cambridge Audio Azur 751BD  
Denon DBP-1611UD  
Denon DBP-2012UD  
Denon DVD-2910  
Denon DVD-3910  
Denon DVD-5910  
Denon DVD-A11  
Denon DVD-A1XVA  
Marantz DV7600  
Marantz UD5005  
NAD M5  
NAD M55  
NAD T585  
OPPO BDP-80  
OPPO BDP-83  
OPPO BDP-83SE  
OPPO BDP-93  
OPPO BDP-95  
Pioneer BDP-140  
Sony BDP-S180  
Sony BDP-S370  
Sony BDP-S370/BX37  
Sony BDP-S380  
Sony BDP-S470  
Sony BDP-S480  
Sony BDP-S570  
Sony BDP-S580  
Sony BDP-S780  
Sony BDP-S870  
Sony BDP-S970  
Sony BDV-E870  
Yamaha BD-S1067

**Current DSD capable DACs:**

Mytek Stereo192-DSD - <http://www.mytekdigital.com/> a USB, FW and SDIF-3 DSD DAC  
Playback Designs MPS/D-3 and MPS/D-5 <http://www.playbackdesigns.com/>  
a USB and ST-optical DSD DAC  
dCS – Scarlatti and Paganini <http://www.dcsLtd.co.uk/>  
EMM Labs XDS1 - <http://www.emmlabs.com/>  
Digital Audio Denmark AX24 - <http://www.digitalaudio.dk/> modular DSD/PCM DAC with MAD1, SDIF-3  
Meitner MA-1 - <http://www.meitner.com/preview/index.html>  
Prism Sound – Dream ADA-8XR [http://www.prismsound.com/music\\_recording/products\\_subs/ada8xr/ada8xr\\_home.php](http://www.prismsound.com/music_recording/products_subs/ada8xr/ada8xr_home.php) 8 channel A to D and D to A  
Stereo DSD recorders  
Korg MR1/2/1000/2000s <http://korg.com/MR2000SBK>

Tascam DV-RA1000HD <http://tascam.com/product/dv-ra1000hd/>

As of this writing the following manufacturers are offering playback software supporting native playback of DSD files:

ChannelD Puremusic:

[www.channld.com](http://www.channld.com). Supports DSD and double rate DSD on Apple Mac.

Audirvana: [www.audirvana.com](http://www.audirvana.com). Supports DSD on Apple Mac.

Korg AudioGate: <http://www.korguser.net/audiogate/en/download.html>

JRiver Media Center 17:

[www.jriver.com](http://www.jriver.com). Supports DSD and double rate DSD on Windows PC.

Merging Technologies Emotion:

[www.merging.com](http://www.merging.com). Supports DSD and double rate DSD on Windows PC. Release planned for late 2012

**The following are software that will playback DSD files, but will convert to PCM during playback:**

HQPlayer/Signalyst: <http://www.signalyst.com/consumer.html> the

upsampling multichannel HD-audio player for Windows and Linux

Foobar2000: <http://www.foobar2000.org/>

advanced free-ware audio player for the Windows PC

**The following labels and artists offer DSD files for download** (many more are in preparation):

Blue Coast Records:

[www.bluecoastrecords.com](http://www.bluecoastrecords.com)

Japan: [http://ototoy.jp/feature/index.php/sound\\_and\\_recording](http://ototoy.jp/feature/index.php/sound_and_recording)

Channel Classics:

[www.channelclassics.com/dsd.html](http://www.channelclassics.com/dsd.html)

Japan: [http://ototoy.jp/feature/index.php/sound\\_and\\_recording](http://ototoy.jp/feature/index.php/sound_and_recording)

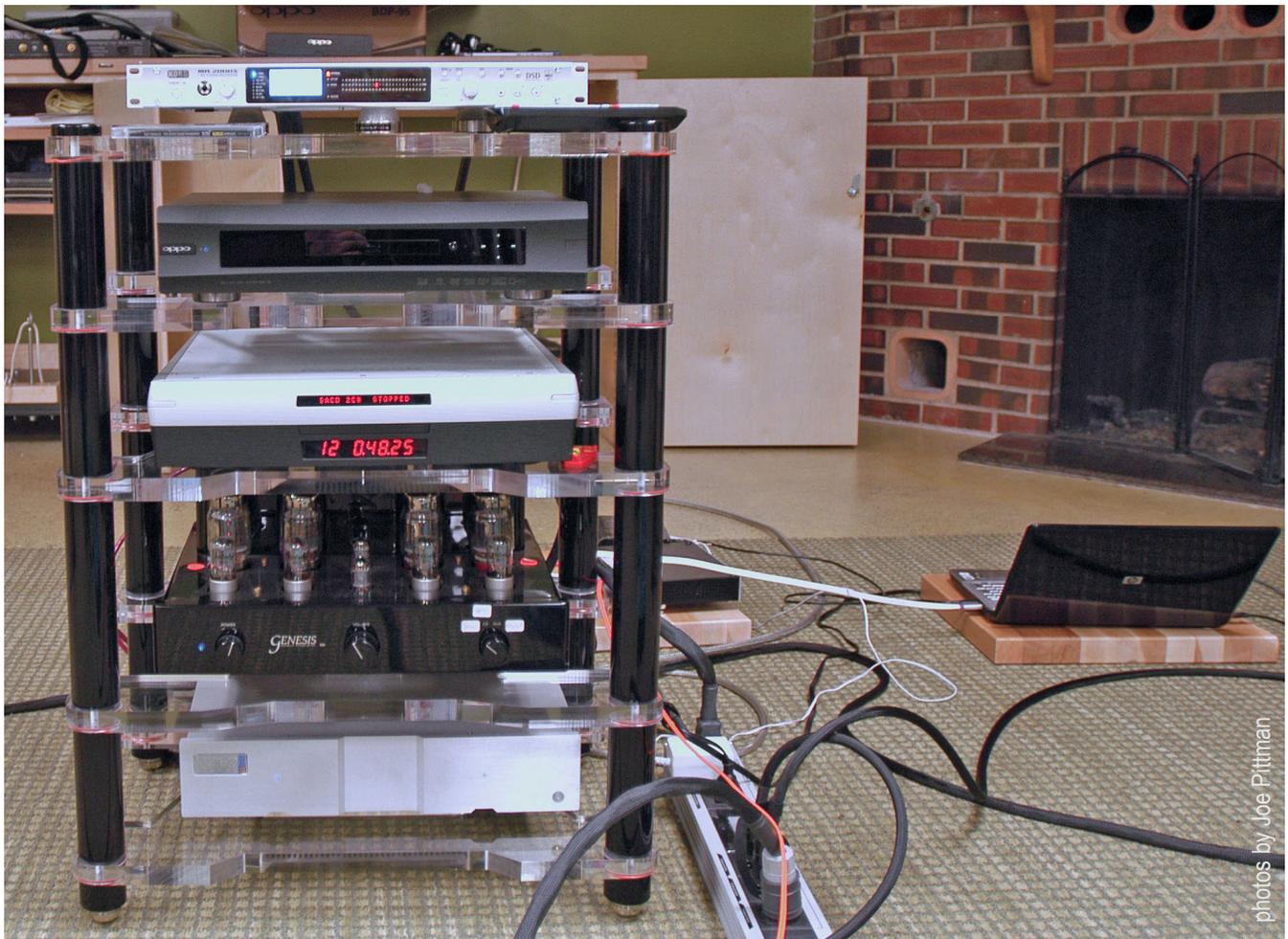
2L: <http://www.2l.no/hires/index.html>

Wheatus: <http://wheatus.com/>

David Elias: <http://www.davidelias.com/>

Site where various artists and labels offer high resolution recordings for download, including DSD: <http://downloadsnow.net>

Germany: [www.cybele.de](http://www.cybele.de)



photos by Joe Pittman

Last but not least, I did some LP recording at Mike L's place last weekend. Some of his "primo" vinyl. This was recorded with a Grimm AD1 DSD converter into a Sonoma system. If you did not get a disc with the files on there, here is the download link. There are also files from "MASTER TAPE TRANSFERS"!

<http://pugetsoundstudios.com/hirez/PNWAS/>

Equipment used for the meeting:

Sonoma DSD workstation (Toshiba Tecra laptop and 2-slot MAGMA chassis)

Playback Designs MPS-5

Mytek 192/DSD Stereo DAC via USB from laptop.



# May 10th Meeting—Playlist

	<p><b>Oh What a Beautiful Morning</b>            Ray Charles            Ray Sings, Basie Swings            Ripped from SACD</p>		<p><b>Movement 1, Allegro moderato</b>            Jascha Heifetz            Tchaikovsky Violin Concerto in D major            Recorded in DSD from vinyl</p>
	<p><b>Take the A Train</b>            Duke Ellington            For Duke            Recorded in DSD from vinyl</p>		<p><b>Blues for Saxophone Club</b>            Jeremy Monteiro; Young &amp; Holt            Blues for Saxophone Club            Ripped from DXD file</p>
	<p><b>St. James Infirmary</b>            Louis Armstrong            Classic Records (single)            Recorded in DSD from 45 rpm vinyl</p>		<p><b>Bach Cello Suite No. 1 in G major</b>            Martin Zeller            Bach: 6 Cello Suites, Vol. 1            Todd Garfinkle live DSD recording</p>
	<p><b>A Case of You</b>            Joni Mitchell            Unreleased            Recorded in DSD from live performance</p>		<p><b>Smoke On the Water</b>            Deep Purple            Machine Head            Recorded in DSD from vinyl</p>
	<p><b>No Quarter</b>            Led Zeppelin            Houses of the Holy            Recorded in DSD from vinyl</p>		

## June 14th Meeting Announcement

### M•A Recordings

by Gary Koh

Don't miss the next PNWAS meeting which will explore the difference between "Live" sound and what's recorded. We are honored to host Mr Todd Garfinkle at our June meeting. Mr Garfinkle is the Owner and Chief Recording Engineer of MA Recordings. The MA label issues provocatively creative music the vast majority of which are produced with only two microphones. All MA Recordings are produced in strictly acoustic settings, often in large, acoustically significant environments such as churches, classical concert halls, and galleries.

Todd will share some of his recording stories and techniques, and introduce his recordings. He will be giving away a high-rez sampler of his recordings to



every club member at the meeting.

One of the hallmarks of MA Recordings is that it is not only the music that is preserved, but also the acoustic space in which the recording is done. Todd will, for the first time, let PNWAS members into his "inner sanctum". He will make a recording "live" witnessed by our members, and we will bring the recording down to our usual meeting venue and play

it back on the club's system. We will hear the difference between being there, and recorded.

We are honored to have two wonderful musicians help out at this event.

Benjamin Zobel, Gold Medallist at the 2012 Seattle Young Artists Festival, will play saxophone and clarinet.

Shaina Rae, singer/songwriter/guitarist and lead singer of Seattle band Alabaster, will sing and play acoustic guitar.

We will have the opportunity to listen to them play in the Church Sanctuary, and then hear the recordings reproduced on the club's system.

## July 12th Meeting Notice

by Jerry Pomeroy

We will be having our first summer social /swap meet at our regular meeting time and place so bring those CDs, LPs and related audio gear. Instead of just letting it set around the house collecting dust while getting older put a price on it or "best offer" then tote it to the 7:30 meeting. You can trade it

for money or barter for that certain something you just cant live without.

A grill, hamburgers, hotdogs and water will be provided. There will be a signup sheet at the June meeting for a few necessities: all are welcome to bring a favorite summer snack and or audio stuff to sell. People bring-

ing items for sale will be responsible for selling (and watching) their own stuff.

August 9<sup>th</sup> Meeting:  
We will debut the new Vanatoo speakers. These small two way powered speakers are incredible.

## Classified Ads

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Esoteric DV50S modded black - \$1,500. Mint condition Esoteric DV-50s modified by Upgrade Co. (David Schulte) with remote and box. The mods that cost extra \$935 brought up a huge improvement of performance! , Plus upgraded IEC inlet with Furutech FI-09 and internal AC power wires. Player has a very little use.

Denon (Exemplar) 3910 - \$1300. John Tucker's modified Denon DVD-3910 in silver. All standard functionality is maintained, and everything is installed within the Denon 3910. !!!AMPEREX 7062 tubes added for better performance.

Furutech RD-2 demagnetizer for \$250.

Contact Andrew Kosobutsky email: [akosobutsky@comcast.net](mailto:akosobutsky@comcast.net)

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Pair of Magnepan MG 3.6 in oak and cream \$2600 PayPal [curbfeeler@comcast.net](mailto:curbfeeler@comcast.net) or cash  
No blemishes, non-smoking home. I am the original owner, purchased Aug 2008. Replaced by Magnepan MG 3.7 here, otherwise I'd still be using these. Pick up only. The original packaging is on hand. West Seattle  
Contact 206 852-7547



Nordost Frey Speaker Cables 4m bi-wire with Z plugs (bananas) From a non-smoking home. Nordost packaging included, although it is mismarked as shotgun. Replaced by Tyr 4m shotgun here, otherwise these would still be in use.  
\$1800 cash or PayPal  
[curbfeeler@comcast.net](mailto:curbfeeler@comcast.net)  
Contact 206 852-7547

See my other items at Head-Fi and Audiogon, seller name curbfeeler.  
<http://app.audiogon.com/listings/nordost-frey-speaker-cables-4m-bi-wire-frey>  
<http://tinyurl.com/6n9phnv>

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Audio Research PH7  
This silver PH7 is in beautiful condition, and needs no introduction. I am the second owner. The voltage regulation upgrade was done at Audio Research in March of 2010. I used it sparingly while comparing it to a couple of other phono stages.  
\$3600 cash or PayPal  
[curbfeeler@comcast.net](mailto:curbfeeler@comcast.net)  
Contact 206 852-7547

*Disclaimer: The Pacific Northwest Audio Society does not endorse nor is liable for any advertisement in any way. Everyone is cautioned to proceed at their own risk.*

## Coming Attractions

### June 14 PNWAS Meeting

Mr Todd Garfinkle, Owner and Chief Recording Engineer of MA Recordings will talk about his recordings and make a live recording in the church. We will then listen to the recording on the clubs system!

### July 12 PNWAS Meeting

Summer Social

### August 9 PNWAS Meeting

After several years of development, club members Gary Gesellchen and Rick Kernen are unveiling their Vantoo powered loudspeaker. It's a giant killer.

### September 9 PNWAS Meeting

Zu Audio will demonstrate their high

efficiency loudspeakers and other products (tentative).

### September 8 or 15 (TBD)

#### The Puget Sound

Our world famous semiannual (every 2 years) DIY speaker building contest.

### October 11 PNWAS Meeting

The winners, and other contestants from The Puget Sound DIY speaker contest will demonstrate (show off) their speakers.



### October 12-14 RMAF

Annual Rocky Mountain Audio Fest. Hi-ho hi-ho, it's off to Denver we go.

### November 8 PNWAS Meeting

Andreas Koch will talk about DSD through USB and all things DSD (tentative).

### December 13 PNWAS Meeting

Annual Christmas party and Best and Funniest Holiday music competition. We may also have a Home Theater demo (tentative).

### Visitors Welcome!

Meetings are held on the second Thursday of every month at 7:30pm at 4545 Island Crest Way, Mercer Island, WA 98040.

### PNWAS Mission Statement

- ◆ To bring people with a common interest in music reproduced at its best, for their mutual edification and pleasure.
- ◆ To facilitate the exchange and dissemination of accurate data concerning audio equipment and musical recordings.
- ◆ To promote, sponsor, and cultivate the highest quality reproduction of music in the home.
- ◆ To encourage maintenance of high standards in the performance, recording and transmission of music.

### PNWAS Objectives

1. Provide a forum for meeting other audio-philes and exchanging information on musical recordings and audio equipment.
2. Demonstrate and compare equipment and recordings.
3. Give members opportunities to become familiar with the techniques of audio manufacturing, testing, repair, recording, broadcasting, etc.
4. Explore related avenues as the member-

ship deems appropriate.

### Club Website

[www.audiosociety.org](http://www.audiosociety.org)

### E-mail

[info@audiosociety.org](mailto:info@audiosociety.org)

### US Mail

Pacific Northwest Audio Society, PO Box 435, Mercer Island, WA 98040

### Annual Dues

\$60 due each January. New members pay a prorated \$5 per month for remainder of year.

### Elected Officers

.President: Darin Forkenbrock  
[forkenbrock@gmail.com](mailto:forkenbrock@gmail.com)

Vice-President: Jay Hop  
[jaybhope@hotmail.com](mailto:jaybhope@hotmail.com)

Secretary/Treasurer: Bruce Brown  
[pugetsoundstudios@yahoo.com](mailto:pugetsoundstudios@yahoo.com)

### Committee Chairs

Editor: Joe Pittman  
[joe@kosmic.us](mailto:joe@kosmic.us)

Equipment: Jerry Pomeroy  
[enhancedsystems@earthlink.net](mailto:enhancedsystems@earthlink.net)

Music: Vacant– Volunteers?

Refreshment: Vacant– Volunteers?

### Editorial

Editorial submissions are welcome.

Content must be audio-related or of general interest to the club in plain text or Word document format without automation (macros and scripts). We reserve the right to edit for style, content, and length.

Editorial Deadline: two weeks before meeting date.

Publishing any editorial material is contingent upon the approval of the Executive Committee.

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