

**Summer Meeting Announcement  
A Cardioid Subwoofer Array  
Theory vs Practice**

**Presented by  
Dan Mortensen  
Dansound Inc.**

**Saturday, August 8th, 1:30pm  
Woodland Park Zoo – North Meadow stage  
Free Admission (to the stage area; scroll to the directions)**

Although it is our custom to not hold meetings during the summer months, occasionally opportunities for meetings present themselves and can't be ignored. This is one of Those Instances.

Our own Dan Mortensen, owner of Dansound Inc, a sound reinforcement company, provides the reinforcement services for a concert series at the Woodland Park Zoo in Seattle. Dan has been the prime contractor for this series since its inception, and he works hard to provide a sound system that meets the needs of the performers, while not traumatizing either the neighbors or the residents of the zoo, who may not understand or appreciate what is happening on the concert stage.

At this workshop Dan will walk us through the process and method of figuring out and implementing a cardioid subwoofer array for a medium-large sound reinforcement system.

Using first: six double 18" boxes (total of twelve 18" drivers), and then: seven boxes (fourteen 18" drivers), we'll listen to the difference between several different combinations of forward and rearward facing speakers, and hear the radical differences that seemingly minor changes to spacing and arrangement can make in coverage and loudness, or the absence thereof.

Dan will share his prediction results, and we will compare that to what we hear. We will also discuss the compromises necessary in choosing between the positives and negatives associated with a particular speaker arrangement when trying to cover a wide, deep space. An arrangement that is good for one need can be bad for another, and you will get to hear the final choice.

We will also talk a little about methods used to keep sound out of the neighborhood and away from the animals.

Dan states that he is by no means an authority on the subject of cardioid arrays, but he has learned a lot during this adventure, and he will do his best to share that learning with you. FWIW, he does seem to be able to adequately solve such problems, though.

**NOTE: Because of the nearby animals and neighbors, we will NOT listen at anything approaching concert volume. The demonstrated effects are clearly audible at very low levels.**

Background: The Woodland Park Zoo concert series ("Zootunes") is now in its 26th year, and Dansound Inc has been the sound provider from the first show. This season the series features the artists The B52's, Mavis Staples, Allen Toussaint, Emmylou Harris/Shawn Colvin/Patty Griffin, Ladysmith Black Mambazo, Los Lobos, Cowboy Junkies, Son Volt, Indigo Girls, Jewel, Joan Baez, Nanci Griffith, Susan Tedeschi, and Amos Lee. The overall seating capacity is just under 5,000. [Zootunes Website](#)

**Directions:**

Directions: From I-5, North & South: Take Exit 169, go westbound on NE 50th.  
Go straight through the major intersection at Stone Way North (about 1 mile from freeway).  
Go straight under the Aurora Avenue overpass (13' 9" clearance), ignore the right turn into Zoo at top of hill.  
Continue West on 50th, which curves to the right and then changes into Phinney Ave N.  
Turn Right at the first real street, N. 59th. (@ the 7-11 store).  
Take the first right into Zoo parking lot; follow arterial around to right; turn left into the Zoo employees parking lot Gate N-5.

**n.b. (If you don't turn, the arterial continues to the right, going down a hill & under a bridge - don't go there).**

Once inside N-5, park (you don't need to pay), then go back out gate N-5 to the North Gate (regular Zoo entrance), tell the ticket taker that you are going to the AES meeting. Proceed straight in, the North Meadow will be on your left just past the Carousel, with the stage at the far side. We'll be on the stage.

**PNW Section Officer and Committee Elections**

At our June meeting, we conducted our yearly elections for the section officers and committee of your Section.

The following persons were elected, to the following positions within your AES section.

<b>Chair</b>	Steve Turnidge
<b>Vice Chair</b>	Rick Chinn
<b>Secretary</b>	Gary Louie
<b>Treasurer</b>	Dave Franzwa
<b>Committee</b>	Bob Smith Dan Mortensen Aurika Hays

Greg Mauser  
Dr. Mike Matesky

## Summer Meeting Notice

It is our custom to not hold meetings during the summer months; our calendar loosely follows that of the school system: September thru June. On occasion, we have been known to hold a special meeting during one of the summer months (see above). Should this occur, you will be notified via this website and by email (as usual). But the truth of the matter is that your section officers need a bit of time to regroup and recharge their collective batteries, and having done that, we begin planning the next year's set of meetings.

Meeting topics are not the exclusive purview of the officers and committee. Some of our best meetings have begun with a topic suggested by one of you, our audience group. If you have a topic that you'd like to see presented, or (even better) you have a topic that you would like to present, please contact any officer or committee person.

In the meantime, **Have A Great Summer.** See you in September.

### Steve Turnidge

*AES PNW 2009-2010 Section Chair*

**n.b.** *The material presented at our meetings is the opinion of the presenter and not necessarily that of the Society. You are encouraged to conduct your own research and to form your own opinions before adopting the presented material as Truth.*

**Our meetings are open to anyone interested in Audio. AES membership is NOT required for you to attend our meetings.**

Last modified 07/22/2009 23:58:40.