tation are the primary source of noise. The problem of transportation noise is not confined by political or social frontiers. It affects the rich who may live in a quiet residential area but who must make full use of transport to maintain their affluent existence, as well as the less fortunate who must live close to a highway, a major road, or an elevated railway line. A systematic development of the capability for accurate predictions of the propagation of land transportation noise in dense high-rise cities is highly desirable. This paper summarizes the current models for predicting sound fields in urban environments and gives an overview of the recent advances of various numerical models to predict the sound field in urban environments. [Work supported by the Research Grants Council of the Hong Kong SAR Government and the Hong Kong Polytechnic University.]

9:45–10:00 Break

10:00

2aNS5. Acoustic pulse propagation in an urban environment. Donald G. Albert (USA ERDC-CRREL, 72 Lyme Rd., Hanover, NH 03755-1290) and Lanbo Liu (USA ERDC-CRREL, Hanover, NH 03755-1290)

Experimental measurements conducted in a full-scale artificial village show that complex signatures are formed by multiple reflections and diffractions from buildings along the propagation path. A two-dimensional finite difference time domain (FDTD) simulation running on a personal computer allows this wave interaction to be studied in detail. Time reversal processing to locate a sound source in an urban area is investigated using this simulation method. The results demonstrate that as few as three non-line-of-sight sensors are sufficient to determine the source location, and that errors on the order of a meter in the building or sensor locations still allow the correct source location to be determined. [Work supported by U.S. Army.]

10:25

2aNS6. Sound field simulation and acoustic animation in urban squares. Jian Kang and Yan Meng (School of Architecture, Univ. of Sheffield, Western Bank, Sheffield S10 2TN, UK, j.kang@sheffield.ac.uk)

Urban squares are important components of cities, and the acoustic environment is important for their usability. While models and formulae for predicting the sound field in urban squares are important for their soundscape design and improvement, acoustic animation tools would be of great importance for designers as well as for public participation process, given that below a certain sound level, the soundscape evaluation depends mainly on the type of sounds rather than the loudness. This paper first briefly introduces acoustic simulation models developed for urban squares, as well as empirical formulae derived from a series of simulation. It then presents an acoustic animation tool currently being developed. In urban squares there are multiple dynamic sound sources, so that the computation time becomes a main concern. Nevertheless, the requirements for acoustic animation in urban squares are relatively low compared to auditoria. As a result, it is important to simplify the simulation process and algorithms. Based on a series of subjective tests in a virtual reality environment with various simulation parameters, a fast simulation method with acceptable accuracy has been explored. [Work supported by the European Commission.]

10:50

2aNS7. Modeling the characteristics of wheel/rail rolling noise. Wai Keung Lui, Kai Ming Li (Dept. of Mech. Eng., The Hong Kong Polytechnic Univ., Hung Hom, Hong Kong), and Glenn H. Frommer (MTR Corp. Ltd., Kowloon Bay, Hong Kong)

To study the sound radiation characteristics of a passing train, four sets of noise measurements for different train operational conditions have been conducted at three different sites, including ballast tracks at grade and railway on a concrete viaduct. The time histories computed by the horizontal radiation models were compared with the measured noise profiles. The measured sound exposure levels are used to deduce the vertical directivity pattern for different railway systems. It is found that the vertical directivity of different railway systems shows a rather similar pattern. The vertical directivity of train noise is shown to increase up to about 30× before reducing to a minimum at 90×. A multipole expansion model is proposed to account for the vertical radiation directivity of the train noise. An empirical formula, which has been derived, compares well with the experimental data. The empirical model is found to be applicable to different train/rail systems at train speeds ranging up to 120 km/h in this study. [Work supported by MTR Corporation Ltd., Innovation Technology Commission of the HKSAR Government and The Hong Kong Polytechnic University.]

Contributed Papers

11:15

2aNS8. Microscopic traffic modelling in urban noise assessment. Bert De Coensel, Dick Botteldooren, Tom De Muer (Acoust. Group, Dept. of Information Technol., Ghent Univ., St. Pietersnieuwstraat 41, B-9000 Ghent, Belgium), Bert Peeters, and Gijsjan van Blokland (M+P Raadgevende Ingenieurs, NL-5260 CB Vught, The Netherlands)

The temporal structure of the urban soundscape can be rather complex, due to the presence of many screening and reflecting surfaces and many different sound sources, of which traffic noise is the most dominant. From the point of view of soundscape research, the background level as well as the time structure of noise peaks are important. However, these indicators cannot be estimated easily by current noise prediction models, based on static traffic flows. Therefore, a dynamic traffic noise model was used, based on a microscopic traffic simulation. This way, individual vehicles can be traced, each having an associated set of noise sources that can depend on vehicle properties such as speed and acceleration, as well as on road properties such as the surface type. The model further consists of an ISO 9613 based propagation component, which can account for multiple reflections and diffractions. Maps of statistical noise levels, but also of more complicated measures reflecting the time structure of the soundscape, can be produced. This way, the soundscape contribution of single vehicles can be traced, as well as the influence of more general vehicle properties, such as the contribution of vehicle acceleration noise to the soundscape at junctions.

149th MEETING OF THE ACOUSTICAL SOCIETY OF AMERICA

The 149th Meeting of the Acoustical Society of America (ASA) will be held Monday through Friday, 16–20 May 2005 in Vancouver, Canada. All Technical Sessions and most meeting events will be held at the Hyatt Regency Vancouver Hotel.

Registration will begin Monday, 16 May, at 7:30 a.m.

SECTION HEADINGS

1. HOTEL INFORMATION

The Hyatt Regency Vancouver Hotel (655 Burrard Street, Vancouver, BC V6C 2R7, Canada) is the headquarters hotel where most meeting events will be held. The cut-off date for reserving rooms at special rates has passed. Please contact the hotel directly at 604-639-4820 (800-233-1234; Fax: 604-639-4829) for information on availability of rooms. Special rates at the Hyatt were: $160 USD/single or double.

2. TRANSPORTATION AND TRAVEL DIRECTIONS

The Vancouver International Airport (YVR) serves over 15 million passengers per year. More than 40 airlines operate 17 International and 22 U.S. scheduled flights per day. For comprehensive information on options for traveling to Vancouver by air, bus, train, ferry or car visit www.tourismvancouver.com/transportation/getting_here.cfm

There are several options for traveling from Vancouver International Airport to downtown Vancouver:

Public transit: From Airport Level 1 take Bus 424 to Airport Station and then Bus 98 to Burrard Station. Buses leave the airport every few minutes and take about 45 minutes to reach downtown Vancouver. Fares cost $2 to $3. For current details visit www.translink.ca

Airporter bus: This bus picks up passengers at several points in the Airport for transport to major downtown hotels. The service runs every half-hour and costs $12 one-way, $18 return. For current details visit www.yvrairporter.com

Taxis: Location of taxi-stands are posted in the Airport Terminal. The fare to the Hyatt is approximately $22.

Car Rental: There are offices of major car-rental companies located both at the airport and downtown. For more details check http://www.tourismvancouver.com/transportation/getting_here.cfm#car

Driving and directions to hotel: For attendees who will be driving, parking is available at the Hyatt Regency Vancouver.

From Vancouver International Airport (14 miles) take Grant McConnachie Way over the Arthur Lang Bridge. Exit Granville Street, proceed north (54 blocks). Turn left at 16th Street. Go down two blocks and turn right on to Burrard Street. Procceed on Burrard and over Burrard Street Bridge to Georgia Street (10 blks). Hyatt Regency Vancouver is on your left.

3. ENTERING AND LEAVING CANADA

Information for US citizens and permanent residents: U.S. citizens and permanent residents require one of the following: 1) birth certificate, 2) resident alien card, 3) green card presented with photo I.D. or 4) a passport valid for at least 6 months after the date of return to the US. A driver's license alone is NOT accepted as proof of citizenship. U.S. Citizenship and Immigration Services <uscis.gov/graphics/index.htm> provides additional information about travel from the US to Canada.

Information for international visitors: Visitors entering Canada from countries other than the United States must have a valid passport, and may require other documentation such as visas. Visit www.cic.gc.ca/english/visit/index.html or check with the nearest Canadian Consulate well in advance of travel for visa requirements. For a list of Canadian Consulate offices visit www.cic.gc.ca/english/offices/missions.html

Citizenship and Visa Requirements for Travel to and from Canada: Information for students and postdocs with F-1 and