



OPEN POSITION AT UNIVERSITY OF EDINBURGH IN THE FIELD OF MUSICAL INSTRUMENT ACOUSTICS

BATWOMAN (Basic Acoustics Training - & Workprogram On Methodologies for Acoustics - Network) is the **Initial Training Network (ITN)** No. 605867, funded under the FP7 Marie Curie programme of the EC. **Duration:** Sep. 1, 2013 - Aug. 31, 2017.

BACKGROUND: The BATWOMAN ITN aims at structuring research training in basic and advanced acoustics and setting up a work program on methodologies for acoustics for skills development in a highly diverse research field offering multiple career options.

The consortium consists of renowned public and private partners from musical acoustics, room acoustics and automotive acoustics who will merge their existing knowledge, extend it jointly and complement it with insights of recent sound perception research, (Fig. 1.) This will exploit existing synergies and overcome obvious fragmentation in research, methodology and basic as well as advanced acoustics training.

Providing interdisciplinary training and joining or exchanging methodology in research, is expected to have a strong impact on the skills of trained researchers as far as sound design capabilities, modelling accuracy, efficiency and applicable frequency range is concerned. Adding the understanding of human auditory perception will help to tackle the hard problem of sound quality parameters and to better understand stimulating effects on well-being and cognition of people exposed to sound, but also harmful effects, like annoyance or even deteriorating cognitive performance.

The ITN will provide interdisciplinary and intersectoral research training for excellence. It will structure existing PhD-level training in acoustics setting up European curricula with compatible and recognised courses offered by Universities and private enterprises. Simultaneously it will

push the state of the art in vibro-acoustic modelling and in interdisciplinary design optimisation by initiating a joint research effort increasing critical mass. The complementary structure of the network will make it not to break apart after the ITN project period. It is rather expected that the methodologies used to analyse, design and optimise transport vehicles, rooms and musical instruments will grow together and will be further developed in an interdisciplinary joint effort.

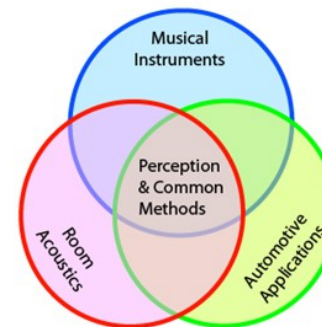


Fig. 1: BATWOMAN R&D scope.

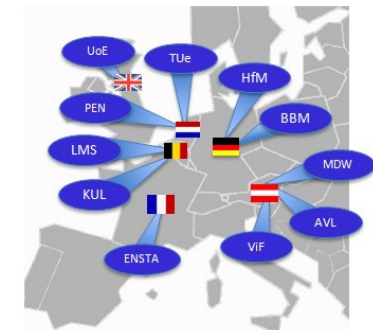


Fig. 2: BATWOMAN consortium.

CONSORTIUM: contains partners (6 universities, 1 research institutes and 4 companies) specialised in three specific application fields of acoustics: Automotive sector, room acoustics and musical instrument acoustics, see Fig. 2. The industrial partners bring in application knowledge and expertise, and the research partners bring in a range of engineering methodologies, the capability of PhD research training, provision of courses and dissemination of results.

COORDINATOR: ViF - Kompetenzzentrum - Das virtuelle Fahrzeug Forschungsgesellschaft mbH, <http://www.v2c2.at/> in Graz, Austria. GRESIMO Coordinator: **Dr. Michael Nöst**, Michael.Noest@v2c2.at



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MARIE CURIE ELIGIBILITY CRITERIA – in short:

- **Early-Stage Researcher (ESR):** holds a degree entitling registration for a PhD, has less than 4 years of postgraduate experience and has not yet been awarded a doctoral degree¹.

Within BATWOMAN, the University of Edinburgh (www.ed.ac.uk) is looking for an ESR (Duration 36 months) focusing on “Experimental validation of fast time domain models for lip-excited musical instruments” .

The successful candidate will work within the multidisciplinary Acoustics and Audio Group at the University of Edinburgh, and will be registered as a PhD student in the School of Physics and Astronomy.

Objectives:

- Experimental study of nonlinear sound propagation in ducts typical of musical brass instrument resonators.
- Experimental study of the nonlinear behaviour of the flow control lip valve in musical brass instruments.
- Experimental study of the effects of valve and slide manipulation during brass instrument playing.
- Validation of Finite Difference Time Domain models of musical brass instruments.

These objectives are part of WP1: Methodology for musical acoustics

Tasks and methodology:

- Experimental studies of high-amplitude sound propagation in brass wind musical instruments using computer generated waveforms: studies of nonlinear effects on radiation from brass instrument bells to be carried out in an anechoic chamber.
- Experimental studies of the behaviour of lip motion in human and artificial brass instrument excitation, using high speed digital video recording, laser vibrometry and sound pressure analysis.
- Comparison of lip motion studies with predictions of existing models of lip excitation of brass wind instruments.

CANDIDATE PROFILE: All candidates must be fluent in spoken and written English. Candidates should have an Honours or Masters Degree in Physics, Engineering or a related subject, and an adequate computational background.

- Knowledge in acoustics of fluids and structures is highly welcome.
- Familiarity with Matlab and other programming languages is an advantage.
- All members of the network are equal opportunity employers; both female and male candidates are invited to apply.

The research activities will mainly be carried out in the Musical Acoustics Laboratory in the University of Edinburgh School of Physics and Astronomy, combined with research visits and/or short-term secondments to other members of the network.

APPLY NOW! Start date target: 1 April 2014

APPLICATION: To apply, please use the University of Edinburgh Job Application web page:

https://www.vacancies.ed.ac.uk/pls/corehrrecruit/erq_jobspec_version_4.jobspec?p_id=023993 (APPLY tab at foot of page)

For further information and informal contact, please email:



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ADDITIONAL INFORMATION FOR APPLICANTS:

The remuneration will be in line with the EC rules for Marie Curie grant holders and consists of a salary augmented by a net mobility allowance. <http://cordis.europa.eu/fp7>.

¹ The research experience includes the period since gaining a university degree giving the candidate access to doctoral studies (the degree must entitle the holder to embark on doctoral studies, without having to acquire any further qualifications).

Among others, following criteria apply for eligibility:

- the researcher shall not be a national of the State in which the hosting partner's research team is located
- at the time of appointment, the researcher may not have resided or carried out her/his main activity in the country of the hosting partner for more than 12 months in the 3 years immediately prior to her/his appointment
- **women are especially encouraged to apply.**