Objective: Achieve acoustic contrast between bright and dark zones by designing FIR filters for speaker inputs.

System Model: Circular array of speakers. Microphones at intended bright zone and dark zones. Number and placement of microphoned to be determined.

Block Diagram: No clue please guide.

Steps:

# Room Impulse Response Detection:

Using a Kalman Filter.

“JOINT ADAPTIVE IMPULSE RESPONSE ESTIMATION AND INVERSE FILTERING FOR

ENHANCING IN-CAR AUDIO”

*Fill in entire mathematical model.*

RIR Detection enhanced by several regularizations.

“ESTIMATION OF TIME-VARYING ROOM IMPULSE RESPONSES OF MULTIPLE SOUND

SOURCES FROM OBSERVED MIXTURE AND ISOLATED SOURCE SIGNALS”

*Fill in entire mathematical model.*

# Inverse Filter Calculation:

BACC/ BACC-RV Methods

*Fill in entire mathematical model.*

What else to be done?

1. Zones are static
2. Zones are moving (Microphone on person, Microphone are fixed person moving)

Iterative solution to BACC-RV maximization objective.

BACC-RV simulations check

BACC for static (combine with Kalman)

BACC dynamic

Check parallel in MATLAB parfor