~~ADAPTIVE CHANNEL FORMING PROCESSING FOR ACTIVE SONAR~~

PATH-FORMING ADAPTIVE PROCESSING FOR ACTIVE SONAR

The present invention relates to the general field of active array antennas. It relates to the adaptive antenna processing methods for active sonars, primarily in Doppler mode, that make it possible in particular to reduce the nuisance caused by the reverberation of the seabed.

Generally, the adaptive antenna processing offers many advantages. The implementation of such processing in a detection system equipped with an array antenna notably enables the system to fight effectively against interference, to have an enhanced angular resolution, or even to benefit from a reduction of the received noise level, this noise being able, for example, to correspond to the sound reverberation originating from the seabed.

As is known, such processing can be applied to the signal received by a multi-sensor antenna, either directly on the signal obtained at the sensor output or to the signal obtained after the formation of reception channels, a reception channel being formed by grouping together a number of the sensors forming the antenna bearing in mind that all or some of the sensors that make up the antenna can be used to form channels.

The different outputs used by the processing constitute what are conventionally called the "references" or the "degrees of freedom" of the processing. Obviously, the more degrees of freedom there are, the more efficient the adaptive processing can be with respect to the nuisances to be overcome.

The implementation of an adaptive channel forming processing relies on a fundamental step consisting in producing the estimation of the covariance matrix of the signals produced by the different references.