EELECTRONIC FOCUSING OF THE ULTRASONIC BEAM BY MEANS OF AN AANNULAR ARRY SYSTEM

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In conventional mechanical contact scanners the lateral resolution is inferier to the axial one. Improving the lateral resolution ovver a wide range of depth, requires the use of a variable fecusing syystem. We choose the phase annular array system which may be used inn obstetrics, gynaecology and breast examinations.

Basing on calculations of the beam pattern and assuming a compromise between dimenions and the feasibility of performance of the porobe, seven elements with equal areas - one disc and six rings were eestablished. The probe is connected to the electronic circuitry wbhich is built in the digital technique /TTL integrated circuits and PPROM memories/.

Calclations of the acoustical pressure were performed assuming puulse excited transducers. For the transmission the range of examiination was divided into five focal zones. During reception the syystem enables dynamic focusing.

Measurements of the ultrasonic beam were carried out for transmiission only. These results are in a good agreement with calculatiions and indicate a considerable increase of the lateral resolutiion.