

## **Possibilities of phased array antenna (PAA) for fusion**

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Effectiveness of the PAA had been demonstrated in 1982 [1]. The central temperature of the plasma was doubled then due to the steerable PAA. By means of PAA, it is possible to focus microwave energy and perform dynamic control of location and shape of the "clot". In ITER, where a system of non-coherent MM wave oscillators (gyrotrons) is supposed, focusing and beam steering are possible only for each source separately. Basically, these options can be achieved by means of controlled microwave lens, however, this task under the frequency 170 GHz and power of 1 MW per source is non-traditional. For alternate fusion concepts, a large-apertured PAA excited by a single gyrotron is considered ([2], [3]). Similar PAA was realized in Russia for the radar [3]. In any case, for all the concepts, additional methods of plasma heating are necessary. Results of the analysis of the electromagnetic field structure in dependence on PAA sizes and radiator type are given.

[1] C.P. Moeller, et al., Phys. Fluids 25, 1211 1982.

[2] A.A. Tolkachev, et al., IEEE Int. Symp., Boston, 266, 1996.

[3] A.A. Tolkachev, et al., Int. Conf., Moscow, 10, 1998.