

Historical overview to the next step of FRC study at Osaka

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The world-wide fusion research has steadily continued for a half century, but the international situation on politics, finance, economy, industry and so on is dramatically changed. This kind of social transitions must stress some modification or turning-over of the research activity since a plenty of finance from the government has been no more expected for the fusion experiment. Therefore, we have to make deep considerations on why the fusion research, especially the FRC study should be maintained and also on how its experiments must be sustained and supported, although we need very long term development for the purpose.

Here the discussion on “why” may be excluded because there exist many complex issues, but only the FRC study of our laboratory has been referred according to the experimental footmark over forty-five years of the magnetic fusion plasma research at Osaka University. This historical consideration may give us a possible solution on “how” in near future. The key words are high beta physics and fast bank technology up to now. The latter should be replaced to be a modern one at least.

My presentation will be then summarized in the following. The significance of the high beta plasma must be advanced particularly in the university scale. Technologically speaking, the cheaper experiment is essential for long term continuity of development, and basically the power supplier have to be regenerated by power semiconductors. This technical progress may also give some spin-off effects in industrial developments through the plasma engineering and related diagnostics, if a part of our attention could be focused for the social support of plasma researches.