The formation of eigenmodes in ICRF waves is investigated in the GAMMA10 central cell by using the two-dimensional wave calculation code.

- The Maxwell equation for the vector and scalar potential is solved by FEM.
- The dielectric tensor is cold plasma approximation including the collision.
- The wave fields are calculated on the bounded, inhomogeneous, and axisymmetric plasmas in the mirror magnetic fields.

Maxwell equation for the potential (coulomb gauge; $\mathcal{V}^2 \phi = 0$)

\[
\begin{align*}
\nabla \times (\mu_0 \nabla \times \vec{A}) &= \frac{1}{\epsilon_0} \frac{\partial \phi}{\partial t} \\
\n\nabla \cdot (\varepsilon_0 \varepsilon_r \nabla \phi) &= \frac{1}{\mu_0} J_{\text{ext}}
\end{align*}
\]

In the previous experiments, the density saturation had been observed with RF1. The density saturation has been released due to the superposition of RF3 to the RF1 produced plasma.