Hello! This is a test to check if Latex is working properly. The following is an example of Maxwell's equations to check that everything is working properly:

$$\oint_{\partial\mathcal{U}} \mathbb{E} \cdot \mathrm{d}\mathbb{S} = \frac{1}{4\pi\varepsilon_0} \int_{\mathcal{U}} \rho \, \mathrm{d}V \tag{1}$$

$$\oint_{\partial\mathcal{U}} \mathbb{B} \cdot \mathrm{d}\mathbb{S} = 0. \tag{2}$$

This is a new paragraph. The following is the well-known Euler identity, which involves the most elementary constants in mathematics:

$$\mathrm{e}^{\mathrm{i}\pi} + 1 = 0. \tag{3}$$

Yet again, this paragraph is set to test the continous integration of the zathura pdf viewer regarding autocompilation. In this case the chosen equation for testing is the normal density function,

$$\mathcal{N}_{\mu,\sigma}(x) = \frac{1}{\sigma\sqrt{2\pi}} \, \mathrm{e}^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}. \tag{4}$$

I'm getting the hang of this. Let's try now with an algebraic equation. The following equation is the main conclusion of the *first decomposition theorem*, which is used to provide a decomposition of a vector space with the Cayley-Hamilton theorem:

$$\ker\left\{P(D)\right\} = \bigoplus_{i=1}^{m} \ker\left\{(D - \lambda_i I)^{m_i}\right\}. \tag{5}$$

Now we try another equation just for the sake of testing git plugin integration. This time we try with a complex analysis formula, Cauchy's integral formula:

$$f(z) = \frac{1}{2\pi\mathrm{i}} \int_{\partial\mathcal{D}_\varepsilon(z)} \frac{f(w)}{z - w} \, \mathrm{d}w. \tag{6}$$