Algorithm 1: Adjust solver tolerance

Input: α, maximum L2 divergence error, $||(Q_T - \nabla \cdot \mathbf{u})_*||_2 \leq \alpha$;
β, maximum relative increase in L2 divergence error,
$\dfrac{||(Q_T - \nabla \cdot \mathbf{u})_{\tau_2}||_2}{||(Q_T - \nabla \cdot \mathbf{u})_{\tau_1}||_2} \leq \beta$;
τ_{max}, maximum solver tolerance;
τ_i, current solver tolerance;
n_f, frequency to adjust tolerance;
$\mu > 1$, solver tolerance multiplier to increase/decrease tolerance by;
n, current step;
Output: τ, the new solver tolerance;
Solution state $(\mathbf{u}, P)$;

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if n mod n_f = 0 then
    τ_1 = τ_i
    Run step at τ_1
    if ||(Q_T − ∇·u)_{τ_1}||_2 > α then
        τ_2 = τ_1 / μ
        Run step at τ_2
    else
        τ_2 = min(μτ_1, τ_max)
        Run step at τ_2
        if ||(Q_T − ∇·u)_{τ_2}||_2 > α or ||(Q_T − ∇·u)_{τ_2}||_2 / ||(Q_T − ∇·u)_{τ_1}||_2 > β then
            τ_2 = τ_1
            Run step at τ_2
    Increment n
    return τ_2
else
    Run step at τ_i

    // Don't update the solver tolerances
    Increment n
    return τ_i
```