```
GP_i_,j_[ℱ_] := Expand[ℱ /. {u_j ↦ (1 - t_i) u_i + t_i u_j,
      f_ . v_j ↦ f (1 - t_i) v_i + f t_i v_j + (t_i - 1) (t_i ∂_t_i f - t_j ∂_t_j f) u_i +
        f t_i u_i }];
bas = {f[t_1, t_2, t_3] v_1, f[t_1, t_2, t_3] v_2, f[t_1, t_2, t_3] v_3,
    u_1, u_2, u_3};
```