1125-34-1924 **Paul Eloe***, 300 College Park, Dayton, OH 454692316, and **Tyler Masthay**, 300 College Park, Dayton, OH 454692316. *Uniqueness implies existence of solutions for two-point boundary value problems for fractional differential equations.*

Let $a < b$ and assume $1 < \alpha \leq 2$. For each $a < x_1 < x_2 < b$, $y_1, y_2 \in \mathbb{R}$, we consider the two-point conjugate type boundary value problem for the fractional differential equation

$$D^{\alpha}_{*x_1} y(x) = f(x, y(x), y'(x)), \quad x_1 < x < b, \tag{1}$$

$$y(x_1) = y_1, \quad y(x_2) = y_2, \tag{2}$$

where $D^{\alpha}_{*x_1} y(x)$ denotes the Caputo fractional derivative of order α. We obtain the following analogue of a well-known result for ordinary differential equations: if

(A) $f : (a, b) \times \mathbb{R}^2 \to \mathbb{R}$ is continuous,

(B) if for each $a < x_1 < b$, $y_1, m \in \mathbb{R}$, solutions of (1) satisfying initial conditions

$$y(x_1) = y_1, \quad y'(x_1) = m,$$

are unique and extend to all of (x_1, b), and

(C) if for all $a < x_1 < x_2 < b$, $y_1, y_2 \in \mathbb{R}$, solutions of (1), (2) are unique, when they exist,

then for all $a < x_1 < x_2 < b$, $y_1, y_2 \in \mathbb{R}$, solutions of (1), (2) exist. (Received September 19, 2016)