# Problem #17

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*Summary: Is a certain conditional rewrite system, which is a linearization of Combinatory Logic extended with surjective pairing, confluent?*

Is the following semi-equational conditional term rewriting system (a linearization of Combinatory Logic extended with surjective pairing) confluent:

$$\begin{array}{rcl} Ix & \to & x \\ Kxy & \to & x \\ Sxyz & \to & (xz)(yz) \\ D_1(Dxy) & \to & x \\ D_2(Dxy) & \to & y \\ x \leftrightarrow^* y \Rightarrow D(D_1x)(D_2y) & \to & x \\ x \leftrightarrow^* y \Rightarrow D(D_1x)(D_2y) & \to & y \end{array}$$

If yes, does an effective normal form strategy exist for it? See [Kd89][dV89].

# Bibliography

[dV89] Roel C. de Vrijer. Extending the lambda calculus with surjective pairing is conservative. In *Fourth Symposium on Logic in Computer Science*, pages 204–215. IEEE, 1989.

[Kd89] Jan Willem Klop and Roel C. de Vrijer. Unique normal forms for lambda calculus with surjective pairing. *Information and Computation*, 80:97–113, 1989.