

28. A method of actuating a mechanical load as recited in claim 23, wherein the second transducer comprises a source of speed.

29. A mechanical differential actuator as recited in claim 23, wherein the differential comprises a first and second speed reducers, and wherein said method further comprises:

- coupling the first transducer to the first speed reducer;
- coupling the second transducer to both the first and second speed reducers; and
- coupling the load to one of the second speed reducer.

30. A mechanical differential actuator as recited in claim 24, comprising:

- maintaining the first impedance constant.

31. A method of actuating a mechanical load as recited in claim 23, wherein the first transducer comprises a moving end, the second transducer comprises a rotor, the mechanical differential comprises a harmonic drive including a wave generator, a flexible spline and a circular spline, and wherein said method further comprises:

- connecting the flexible spline to the moving end of the first transducer;
- connecting the rotor to the wave generator; and
- using a circular spline as the third interaction port.

32. A method of actuating a mechanical load as recited in claim 30, further comprising:

- integrating the first transducer inside the rotor

33. A method of actuating a mechanical load as recited in claim 30, comprising:

- integrating the first transducer around the stator.

34. A mechanical differential actuator as recited in claim 1, wherein the mechanical differential comprises a speed reducer mechanism for implementing a mechanical differential function, the first and second transducers being coupled to the speed reducer.

35. A mechanical differential actuator as recited in claim 34, wherein the speed reducer mechanism comprises an element selected from the group consisting of a standard gearbox, a planetary gearbox, a cycloidal gearbox, a harmonic drive, a bar mechanism and a cable mechanism.

36. A mechanical differential actuator as recited in claim 1, wherein the differential comprises a first and second speed reducers, wherein both speed reducers are implemented using similar physical components.

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