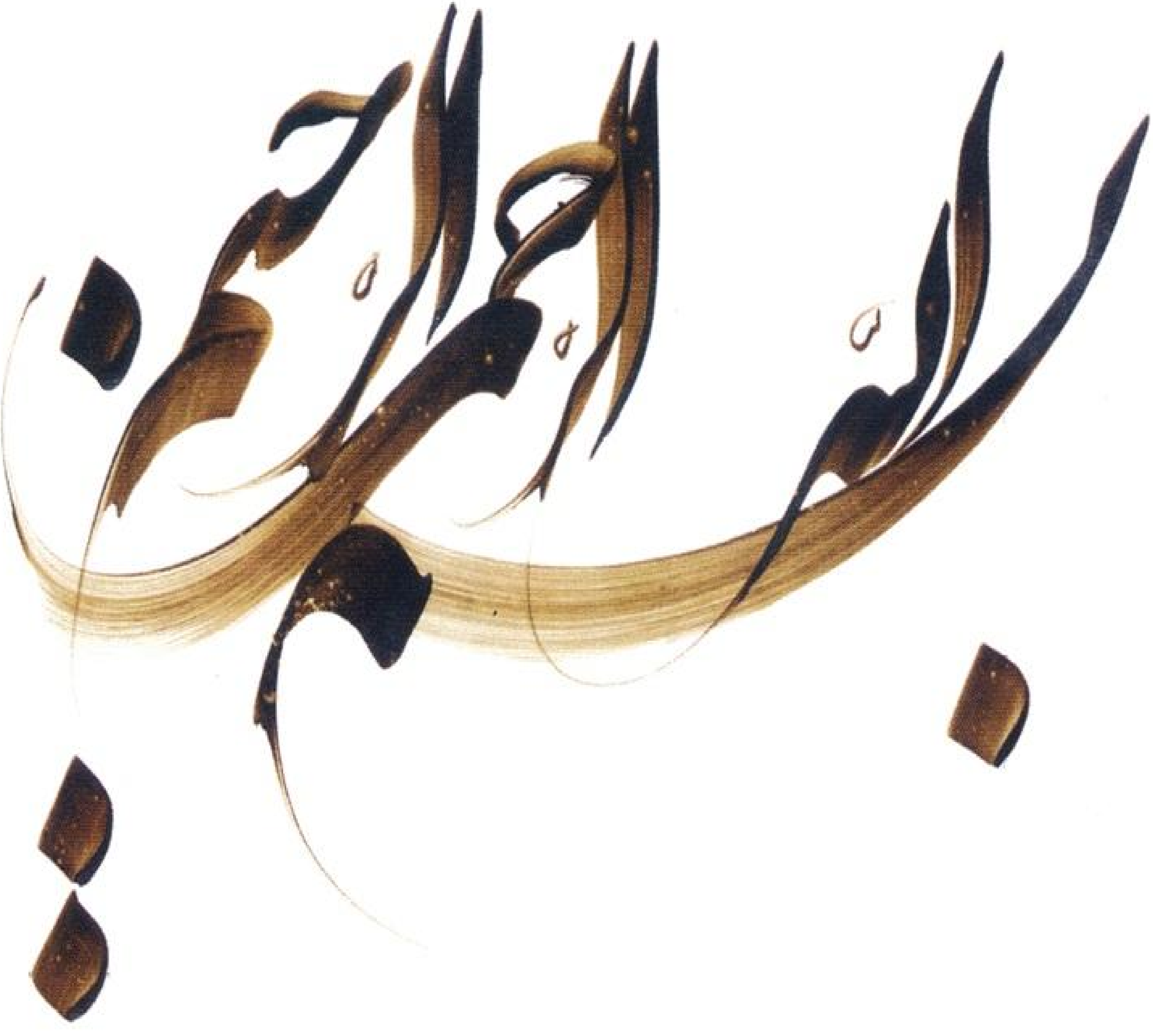

Semnan university

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Auuuuuuu

چکیده

–algebra$K$ hyper dual –algebra)BE (hyper on "δ" relation fundamental a introduce we paper، this In regular a via –algebra$K$ hyper dual any of quotient that show We properties. some investigate and –algebra.BE a is relation regular strongly any via quotient this and –algebraBE hyper a is relation commutative weak any of quotient and transitive is condition some under "δ" that shows it Furthermore، –algebra.BCK dual a is "δ^*" via –algebra$K$ hyper dual

axioms following if –algebraBE *a called is* $(۲, ۰)$ *type of* $(X; *, ۱)$ *algebra An [۴]* .۱.۰ **Definition**

hold:

$$x * x = ۱, \quad (BE۱)$$
$$x * ۱ = ۱, \quad (BE۲)$$
$$۱ * x = x, \quad (BE۳)$$
$$x, y, z \in X. \text{ all for } x * (y * z) = y * (x * z), \quad (BE۴)$$

$x, y \in X, (x * y) * y =$ *all for if commutative*□ *be to said is* $(X; *, ۱)$ *–algebra*BE *The* $x * y = ۱.$ *if only and if* $x \leq y$ *by* X *on*$"\leq"$ *relation a introduce We* .$(y * x) * x$

Then –algebra.BE *a be* X *Let [۴]* .۲.۰ **Proposition**

$$x * (y * x) = ۱, \quad (i)$$
$$.x, y \in X \text{ all for } □ y * ((y * x) * x) = ۱ \quad (ii)$$

if –algebra BCK *dual a called is* $(۲, ۰)$ *type of* $(X; *, ۱)$ *algebra An [۹]* **.۳.۰ Definition**

$□x * x = ۱$ *)BE□(*

$□x * ۱ = ۱$ *)BE□(*

$□x * y = y * x = ۱ \Longrightarrow x = y$ *)dBCK□(*

$□(x * y) * ((y * z) * (x * z)) = ۱$ *)dBCK□(*

$x, y.z \in X.$ *all for* $□x * ((x * y) * y) = ۱$ *)dBCK□(*

$x, y \in X, (x*y)*y =$ *all for if commutative□ be to said is* $(X; *, ۱)$ *–algebra* BCK *dual The*
$.(y * x) * x$

Then: –algebra. BCK *dual a be* $(X; *, ۱)$ *Let [۹]* **.۴.۰ Lemma**

$□x * (y * z) = y * (x * z)$ *)i(*

$.۱ * x = x$ *)ii(*

–algebra BE *commutative any and –algebra* BE *a is –algebra* BCK *dual Any [۹]* **.۵.۰ Proposition**
–algebra. BCK *dual a is*

Then –algebra.K *hyper a be* H *Let [۴]* .۶.۰ **Theorem**

$$\square x \in x \circ ۰ \quad (i)$$
$$.x \in H \text{ all for } \square ۰ \in ۰ \circ x \quad (ii)$$

hyperoperation. a be $\circ : H \times H \to P^*(H)$ *and set nonempty a be* H *Let [۴]* .۷.۰ **Definition**
axioms: following the satisfies it if –algebra$\square BE$ *hyper a called is* $(H; \circ, ۱)$ *Then*

$$\square x < x \text{ and } x < ۱ \quad (HBE_۱)$$
$$\square x \circ (y \circ z) = y \circ (x \circ z) \quad (HBE_۲)$$
$$\square x \in ۱ \circ x \quad (HBE_۳)$$
$$.x, y, z \in H \text{ all for } \square x = ۱ \text{ implies } ۱ < x \quad (HBE_۴)$$

following the and $(HBE_۲)$ $\square(HBE_۱)$ *satisfies if –algebra*K *hyper dual a called is* $(H; \circ, ۱)$
axioms:

$$\square x \circ y < (y \circ z) \circ (x \circ z) \quad (DHK_۱)$$
$$.x, y, z \in H \text{ all for } \square x = y \text{ that imply } y < x \text{ and } x < y \quad (DHK_۲)$$

$$.x < y \Leftrightarrow ۱ \in x \circ y \text{ by defined is } {}'' < '' \text{ relation the Where}$$

follows: as " $\circ$ " *hyperoperation the Define* .$X = \{۱, a, b, c, d, e\}$ *Let* .۸.۰ **Example**

$\circ$	۱	a	b	c	d	e
۱	$\{۱, e\}$	$\{a\}$	$\{b\}$	$\{c\}$	$\{d\}$	$\{e\}$
a	$\{۱, e\}$	$\{۱, e\}$	$\{b\}$	$\{c\}$	$\{d\}$	$\{e\}$
b	$\{۱, e\}$	$\{a\}$	$\{۱, e\}$	$\{c\}$	$\{d\}$	$\{e\}$
c	$\{۱, e\}$	$\{a\}$	$\{b\}$	$\{۱, e\}$	$\{d\}$	$\{e\}$
d	$\{۱, e\}$	$\{a\}$	$\{b\}$	$\{c\}$	$\{۱, e\}$	$\{e\}$
e	$\{۱, e\}$	$\{a\}$	$\{b\}$	$\{c\}$	$\{d\}$	$\{۱, e\}$

that see to easy is It –algebra.K *hyper dual a is* $(X; \circ, ۱)$ *Then*

$$R = \{(۱, ۱), (a, a), (b, b), (c, c), (d, d), (e, e), (۱, e), (e, ۱)\}$$

and X *on relation regular strongly good a is*

$$X/R = \{\{۱, e\}, \{a\}, \{b\}, \{c\}, \{d\}\} = \{R(۱), R(a), R(b), R(c), R(d)\}.$$

have: we Now،

$*$	$R(١)$	$R(a)$	$R(b)$	$R(c)$	$R(d)$
$R(١)$	$R(١)$	$R(a)$	$R(b)$	$R(c)$	$R(d)$
$R(a)$	$R(١)$	$R(١)$	$R(b)$	$R(c)$	$R(d)$
$R(b)$	$R(١)$	$R(a)$	$R(١)$	$R(c)$	$R(d)$
$R(c)$	$R(١)$	$R(a)$	$R(b)$	$R(١)$	$R(d)$
$R(d)$	$R(١)$	$R(a)$	$R(b)$	$R(c)$	$R(١)$

–algebra.BCK dual a is $(X/R; *, R(١))$ Clearly،

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