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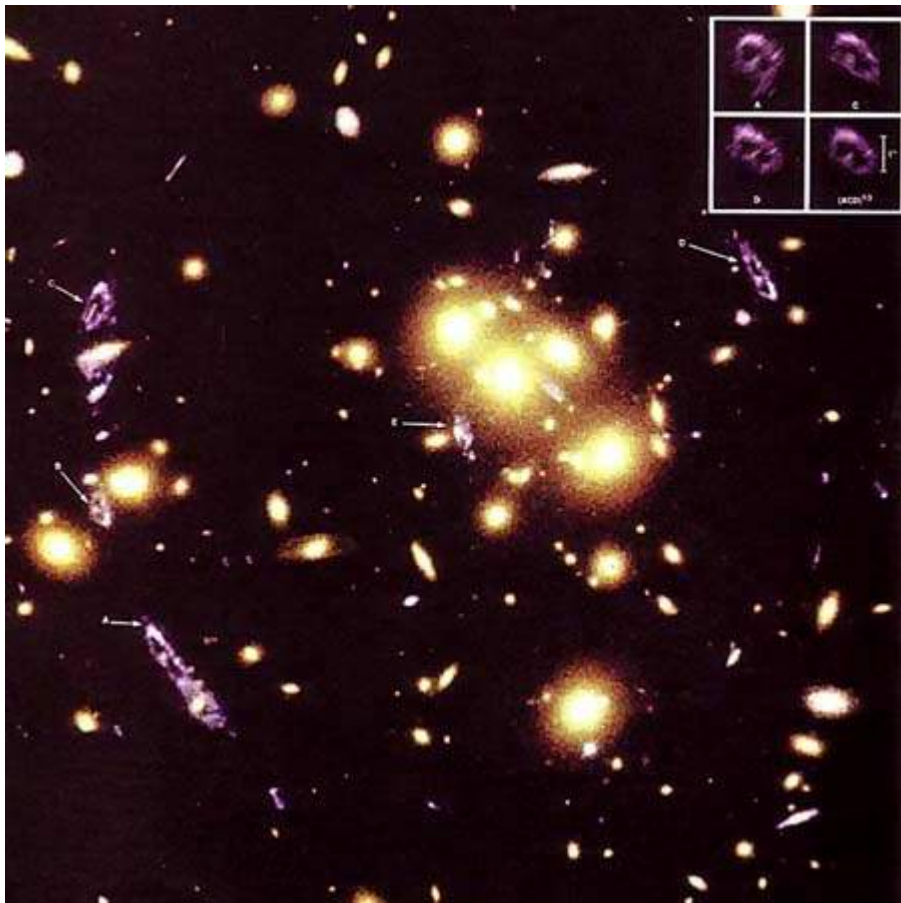
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(A, B, C, D, E).

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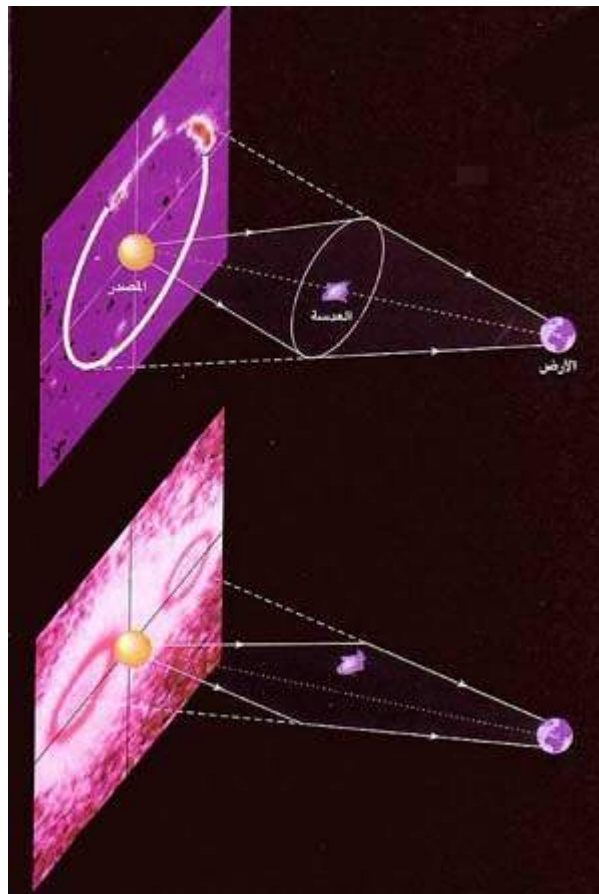
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561+0957 quasar <sup>(1)</sup>

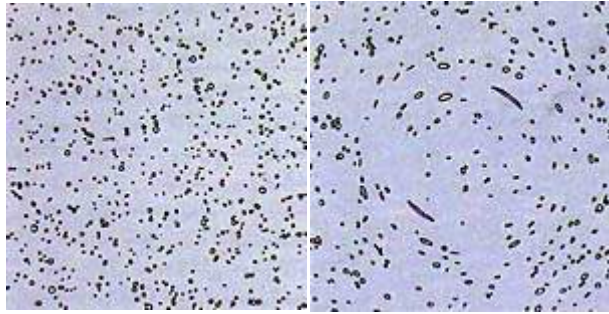
<sup>(2)</sup>

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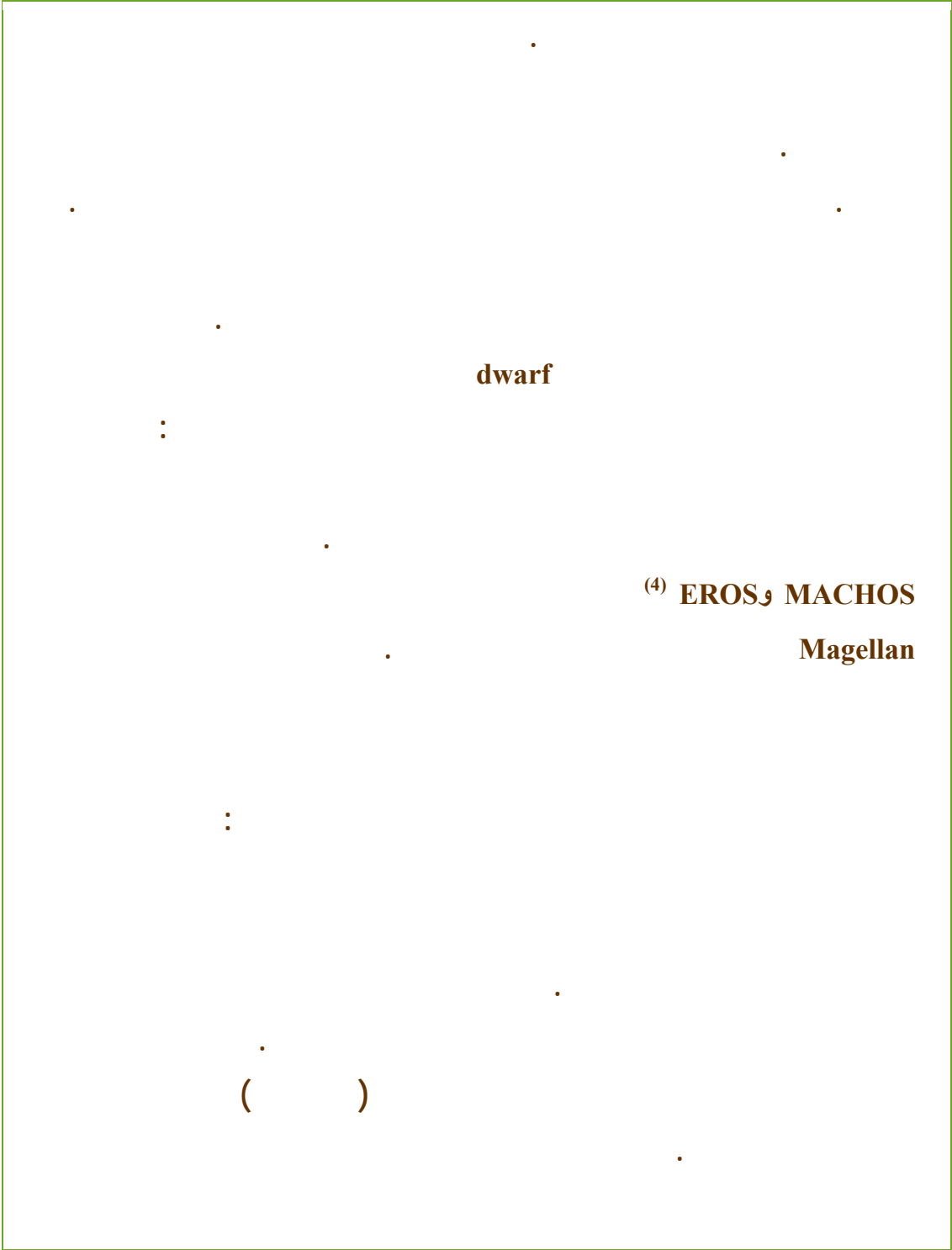
( c m E )  $E = mc^2$  :  
 particles

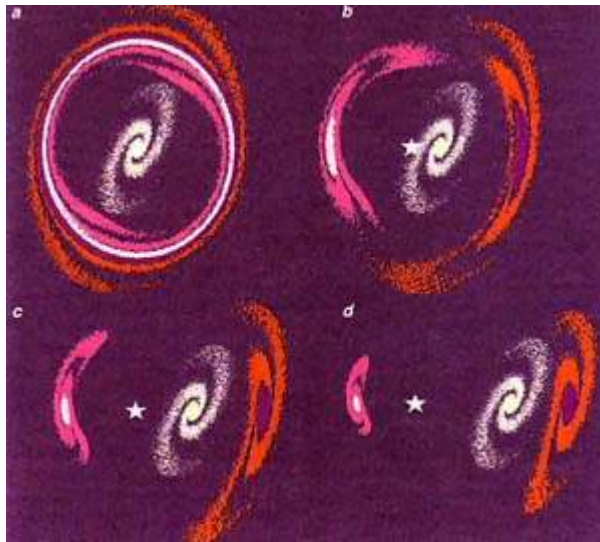
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luminosity  
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(a)

(b, c, d).

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**Bang Big**

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**Hubble**

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**Doppler**

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**Cepheids**

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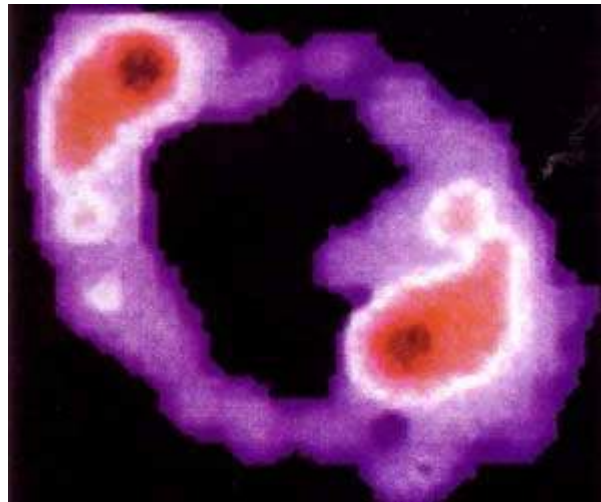
standards chandelles «

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PKS 1830-

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211

VLA

interferometric

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attractor

40

.megaparsec/sec/km <sup>(7)</sup>

100

$d_2$  و  $d_1$

$d_2/d_1$

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$2d \text{ \& } 1d$

$(2d-1d)$

$2d/1d$

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561+0957 QSO

(

537 404

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deflector

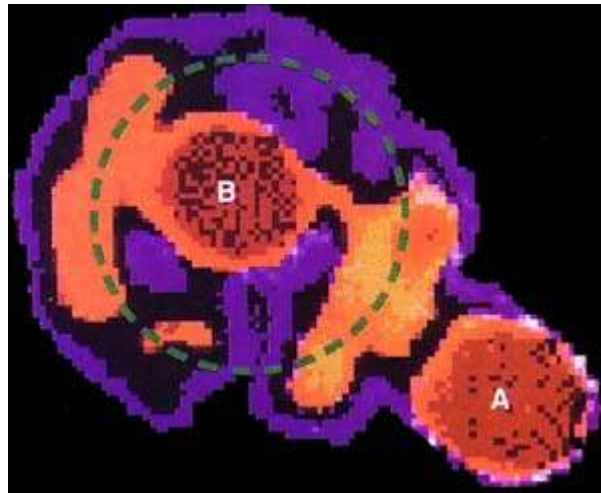
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117 megaparsec/sec/km **33**

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B0218+357.

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211-1830 PKS

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.megaparsec/sec/km 30

alpha-Lyman

.alpha-Lyman « »

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) isotopes



