

()

*

(// : // :)

($r^2 = 0.97$)

(/ Hz/cc)

(/ Hz/cc)

Hz/cc

± / cc

($r^2 = 0.98$)

()

(.)

()

()

.() (r² = 0.97)

()

5

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C++

Statistica V.6

.()

.()

[]

.()

$$f = \frac{c}{2 \cdot \pi} \sqrt{\frac{A}{(L - L_c) \cdot (V - V_0)}} \quad ($$

5. Standing Waves

-
1. Helmholtz Resonator
 2. Input Lip
 3. Throat
 4. Chamber or Cavity

a

V (m/s)
(m³)

f

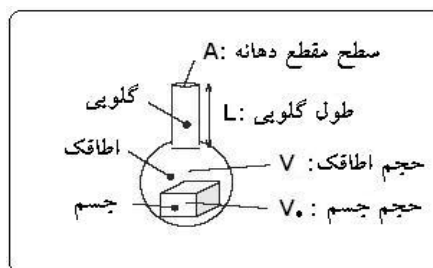
c (Hz)
V₀

L_c

L

(m²)

A (m)



(V= cc)

(a= / cm)

(L - L_c) ()

V)

() :

V

(M

$$(L - L_c) = L + \frac{16 \cdot a}{3 \cdot \pi} \quad ()$$

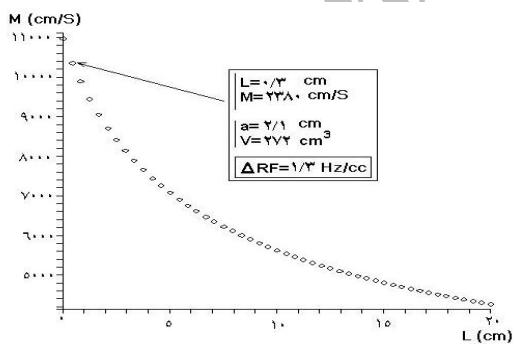
a

$$A = \pi \cdot a^2 \quad ()$$

M (c= m/s)

() ()

() (L)



) M

(L)

$$f = \frac{c}{2 \cdot \pi} \sqrt{\frac{\pi \cdot a^2}{\left(L + \frac{16 \cdot a}{3 \cdot \pi}\right) \cdot (V - V_0)}} \quad ()$$

$$f = \left[\frac{c \cdot a}{2} \sqrt{\frac{3}{3 \cdot \pi \cdot L + 16 \cdot a}} \right] \cdot \sqrt{\frac{1}{(V - V_0)}} \quad ()$$

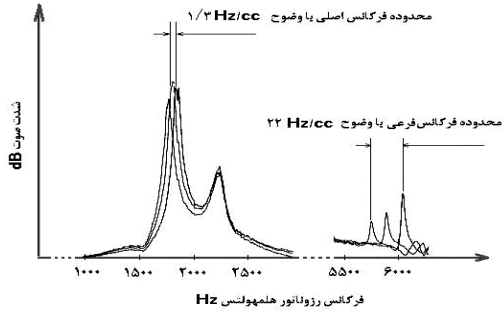
() M

(ΔRf)

)

(Hz Hz

M ()



/ Hz/cc

()

/ Hz/cc

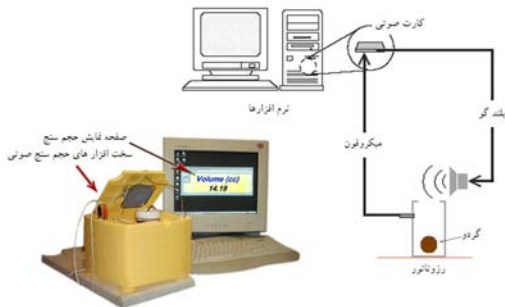
Hz/cc

1

()

2

()



()

()

(Chrystal Sound Fusion tm CS 4281)

1. Maximum Entropy Method (MEM)
2. Fast Fourier Transform (FFT)

/ cc)

Statistica V6.

(/ cc

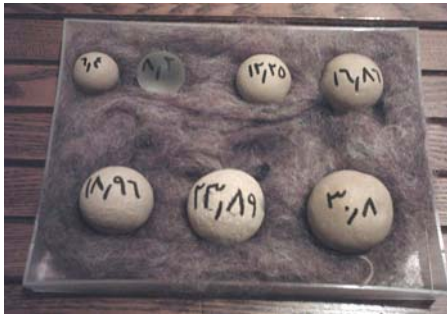
(Hz Hz)

()

()

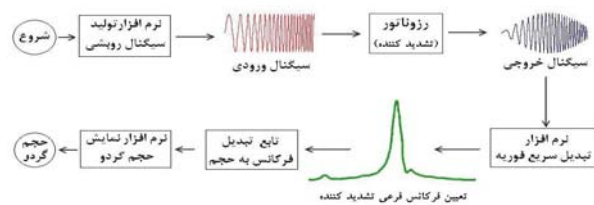
C++

± cc



(/ Hz)

(FFT Size = 16384)



()

)

$$V = \frac{\pi \cdot d^3}{6}$$

(± / mm

1. Sweep Signal Generator

2. Dynamic Data Exchange (DDE).

()
/ t ()
()

(> cc)

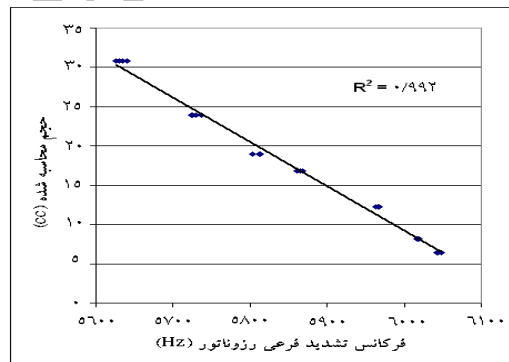
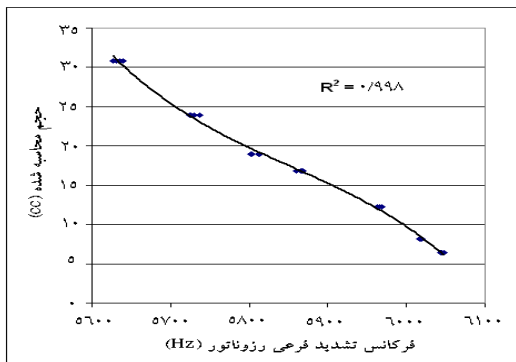
± cc
± / cc

± / cc

± / cc

()

(f)

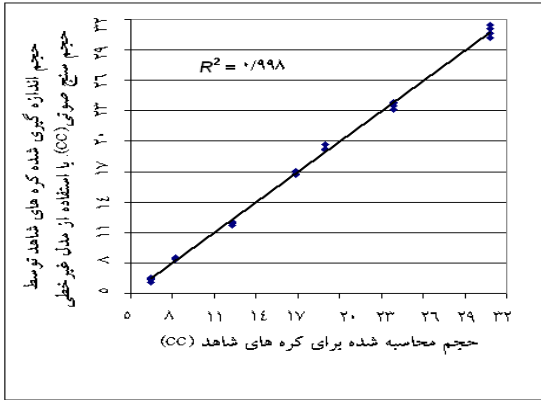


() ()

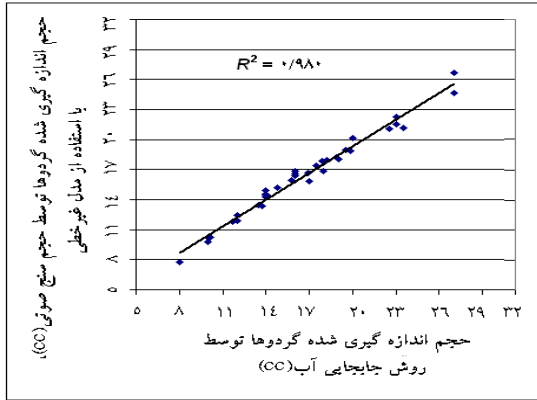
عدم قطعیت پیشینه در تخمین حجم (CC)	شکل مدل	ضرایب مدل	مقدار P	نام مدل
± 1/13	$Volume = a \cdot F + b$	$a = -0.0564$ $b = 347.679$	0.992	خطی
± 0.48	$Volume = a \cdot F^3 + b \cdot F^2 + c \cdot F + d$	$a = -3.51e-7$ $b = 0.0061$ $c = -36.108$ $d = 70.624/947$	0.998	ضریب خطی

t ()

گروه ۱ (حجم محاسبه شده کوره های شاهد) در مقابل گروه ۲ (حجم کوره های شاهد تخمین زده شده توسط حجم سنج صوتی)										
میانگین گروه ۱	میانگین گروه ۲	مقدار t	درجه آزادی	مقدار P	تعداد نمونه های گروه ۱	تعداد نمونه های گروه ۲	انحراف معیار گروه ۱	انحراف معیار گروه ۲	نسبیت F	واریانس P
16.7657	16.7657	0.0000	52	1.000	28	28	8.198930	8.190449	1.00407	0.9957



()



()

Hz

/

Hz

FFT

/

1

2

1. Sweeping Time
2. Repeatability

cc

± / cc

± /

± / cc

1

()

± / cc

± / cc

± / cc

cc

1. White Noise

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